

U.S. Department of Energy
Office of River Protection
Mr. Michael K. Barrett
Contracting Officer
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Richland, Washington 99352

CCN: 023760

Dear Mr. Barrett:

**CONTRACT NO. DE-AC27-01RV14136 – TRANSMITTAL FOR APPROVAL –
AUTHORIZATION BASIS CHANGE NOTICE ABCN-24590-01-00006, REVISION 1,
CHANGES TO THE PROCESS SAFETY MANAGEMENT (PSM) PROGRAM**

- References:
- 1) CCN 023758, Letter, A. R. Veirup, BNI, to M. K. Barrett, ORP, “Transmittal for Information - Safety Requirements Document Page Changes Per U.S. Department Of Energy Partially- Approved Authorization Basis Change Notice ABCN-24590-01-00006, Revision 0, Changes To The Process Safety Management (PSM) Program,” dated October 4, 2001.
 - 2) CCN 023253, Letter, R. C. Barr, OSR, to R. F. Naventi, BNI, “Office of Safety Regulation Partial Approval of Bechtel National Inc. (BNI) Authorization Basis Change Notice, ABCN-24590-01-00006,” 01-OSR-0311, dated September 17, 2001.
 - 3) CCN 021275, Letter, A. R. Veirup, BNI, to M. K. Barrett, ORP, “Revision 0 of Authorization Basis Change Notice ABCN-24590-01-0006 (ABAR-W375-00-00013),” dated July 16, 2001.

Bechtel National, Inc. (BNI) is submitting Authorization Basis Change Notice (ABCN), ABCN-24590-01-00006, Revision 1, to the U.S. Department of Energy (DOE), Office of River Protection (ORP), and the Office of Safety Regulation (OSR) for approval (Attachment 1). As requested by Reference 2, ABCN-24590-01-00006, Revision 0, was revised to retract the proposed change to SRD-SC 1.0-1 involving deletion of the Integrated Safety Management Plan as an implementing standard. However, OSR-approved page changes to correct the inadequate proposed SRD Safety Criterion 2.0-2 and incorporate the changes suggested by the Safety Evaluation performed by the OSR in Authorization Basis Amendment Request, ABAR-W375-00-00013 were transmitted to the DOE (Reference 1).

An electronic copy of ABCN-24590-01-00006, Revision 1, is provided for the OSR’s information and use.



Authorization Basis Change Notice

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ABCN Number ABCN-24590-01-00006 Revision 0
ABCN Title Changes to the Process Safety Management (PSM) Program

II. Description of the Proposed Change to the Authorization Basis

D. Affected AB Documents:

Title	Document Number	Revision
Safety Requirements Document, Vol . II	BNFL-5193-SRD-01-02	4
Integrated Safety Management Plan x	BNFL-5193-ISP-01	6

Decision to Deviate ☐ Yes ☒ No

If yes, DTD Number _____ Deficiency Report Number _____
Initiating Document Number DOE Letter 00-RU-418 Revision _____
(ABAR-W375-00-00013)
dated 7/28/00

E. Describe the proposed changes to the Authorization Basis Documents:

Revise the definition of Safety Design Class (SDC) in SRD SC 1.0-8 and SRD SC 2.0-2 from ERPG-2 to workers or the public to now cite ERPG-2 to the public, ERPG-3 to the co-located worker, or a single worker fatality or hospitalization of 3 or more workers. Provide for use of TEEL values as substitute criteria in cases where no ERPG value has been published. Updated ISMP Chapter 12 definition of SDC to clarify chemical exposure aspect.

Replace ISMP with SRD Appendix A as an implementing standard for SRD SC 3.1-1, -3, -4, -5.

Delete ISMP as implementing standard for SRD SC 1.0-1, 3.1-2 and 3.1-8.

Remove references to 29 CFR 1910.119 and/or 40 CFR 68 as regulatory bases in SRD SC 1.0-1, 3.1-1, -2, -3, -5, -6, -7, -8, 4.0-2, 4.5-23, 6.0-1, -5, 7.1-1, -2, 7.2-3, -3, -5, -6, -7, -8, 7.3-7, -10, -11, 7.6-2, -4, 7.7-1, -2, -3, 7.8-1, -2, -5, 9.1-7, and ISMP Sections 1.3.16, 1.3.17, 3.10, 5.0, 5.6.8, and 9.2.

Delete SRD Section 9.3. Delete reference to SRD Section 9.3-1 in safety criterion 9.1-7.

Revise SRD SC 3.1-1 to specify that chemical hazards must be included in the PHA.

Revise SRD SC 3.1-2 to allow compilation of process safety information appropriate to the level of design, to support the PHA.

Revise the update frequency for PHA and HAR specified in SRD SC 3.1-7, and ISMP Sections 5.6.2 and 9.2 from once every 5 years to annual.

Revise the seismic design criteria in SRD SC 4.1-3 and 4.1-4, and ISMP Section 1.3.10 for SSC's designated SDC on the basis of chemical consequences from SC-I/II to SC-III.

Revise the chemical concentration limits specified in SRD SC 4.3-7 for control room habitability from ERPG-2 to the values specified in 29 CFR 1910.120, and add 29 CFR 1910.120 to the list of regulatory bases.

Include chemical hazards in the definition of USQ specified in SRD SC 7.4-1, and ISMP Section 3.16.4.

Revise the scope of the Hazards Identification specified in SRD Appendix A, Section 4.3.1 to include chemical hazards.

Revise the discussion of control room habitability in SRD Appendix A, Section 5, and ISMP Section 1.3.7 and 1.3.8 to be consistent with changes made to SRD SC 4.3-7.

F. List associated ABCNs and AB documents:

ABAR-W375-00-00013, Revision 0, Changes to the Process Safety Management (PSM) Program
SRD (BNFL-5193-SRD-01-02) and ISMP (BNFL-5193-ISP-01)



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ABCN Number ABCN-24590-01-00006 Revision 0
ABCN Title Changes to the Process Safety Management (PSM) Program

G. Explain why the change is needed:

ABCN-24590-01-00006 is necessary to replace ABAR-W375-00-00013 revision 0 to incorporate changes that are necessary to obtain OSR approval based on DOE letter, 00-RU-0514, dated July 28, 2000. Based on the attachment to DOE letter, 00-RU-0514, dated July 28, 2000, the following changes were necessary to ABAR-W375-00-00013: For SRD SC 1.0-1, 3.1-2 & 3.1-8, ISMP has been removed as an implementing standard and for SRD SC 2.0-2 the criteria for facility worker exposure has been revised to: Accidents affecting the facility worker that could cause in-patient hospitalization of at least 3 facility workers, or at least a single fatality. Note that the change to SRD SC 2.0-2 resolves the issues with SRD SC 1.0-8, SRD Appendix A, ISMP 1.3.7 and ISMP section 12. Note that the QAP section 1.3.1 has subsequently been changed hence this issue no longer applies.

H. List the implementation activities and the projected completion dates:

<u>Activity</u>	<u>Date</u>	
Inform DOE that AB has been revised	30 days after DOE approval	
Distribute revised pages	30 days after DOE approval	
Provide updated electronic version of AB to DOE	30 days after DOE approval	
Revise the following implementing documents:		
<u>Documents</u>	<u>Describe extent of revisions</u>	<u>Date</u>
1		
2		
<u>Describe other activities:</u>		<u>Date</u>
1		
2		

III. Evaluation of the Proposed Change

I. Is DOE prior approval required?

- 1 Does the revision involve the deletion or modification of a standard previously identified or established in the SRD? Yes ☒ No ☐
Explain
See Attachment 3, Evaluation of SRD & ISMP Proposed Change Summary
- 2 Does the revision result in the reduction in commitment currently described in the AB? Yes ☐ No ☒
Explain
Implementation of the changes to the SRD and ISMP will not result in a reduction in commitment currently described in the Authorization Basis. See Attachment 3, Evaluation of SRD & ISMP Proposed Change Summary Table.
- 3 Does the revision result in a reduction in the effectiveness of any procedure, program, plan, or management process described in the AB? Yes ☐ No ☒
Explain



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Implementation of the changes to the SRD and ISMP will not result in a reduction in the effectiveness of any procedure, program, plan, or management process described in the Authorization Basis. See Attachment 3, Evaluation of SRD & ISMP Proposed Change Summary.

J. Complete the safety evaluation by describing how the revision to the AB:

- 1 will continue to comply with all applicable laws and regulations, conform to top-level safety standards, and provide adequate safety
See Attachment 3, Evaluation of SRD & ISMP Proposed Change Summary
 - 2 will continue to conform to the original submittal requirements associated with the AB documents being revised
See Attachment 3, Evaluation of SRD & ISMP Proposed Change Summary
 - 3 will not result in inconsistencies with other commitments and descriptions contained in the AB or an authorization agreement
See Attachment 3, Evaluation of SRD & ISMP Proposed Change Summary
-

K. Justification of the Proposed Change

Provide a justification that demonstrates that the proposed change is safe

Laws and regulations potentially affected by the proposed changes to the SRD include 29 CFR 1910.119 and 29 CFR 1910.120, 40 CFR 68, and the Uniform Building Code. WTP remains fully compliant with these laws and regulations.

The proposed changes continue to ensure adequate safety to the public and the worker. DOE/RL-96-0006, Section 4.1.6 requires that measures in the design and operation of the facility necessary to protect the public and workers against accident conditions should be evaluated against acceptable guidelines to demonstrate that they perform their intended purpose with high confidence.

The impact of these changes has been evaluated. The result of this evaluation found no adverse impact, and the SRD identifies a set of standards which continue to provide adequate safety, compliance with all applicable laws and regulations, and conformance to top-level safety standards.

Attachments:

1. Safety Requirements Document (SRD), BNFL-5193-SRD-01, Proposed Changes
2. Integrated Safety Management Plan (ISMP), BNFL-5193-ISP-01, Proposed Changes
3. Evaluation of SRD & ISMP Proposed Changes Summary

**River Protection Project - Waste Treatment Plant
Safety Requirements Document Volume II
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1.0 Radiological, Nuclear and Process Safety Objectives

1.0 Radiological, Nuclear and Process Safety Objectives

Safety Criterion: 1.0 - 1

A comprehensive radiological and process safety management program shall be used to eliminate or reduce the incidence, or mitigate the consequences of, accidental radioactive or chemical releases, process fires, and process explosions. This program shall address management practices, technologies, and procedures. Radiological and process safety management shall confirm that the facility is properly designed, the integrity of the design is maintained, and the facility is operated according to the safe manner intended.

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan~~
~~Section: 4.1 Safety Management Processes~~
~~Chapter: 5.0 Process Safety Management~~

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 10~~
DOE/RL-96-0006 5.1.1 Process Safety Management
DOE/RL-96-0006 5.1.2 Process Safety Objective

Safety Criterion: 1.0 - 2

Principal emphasis shall be placed on the prevention of accidents, particularly any that could cause an unacceptable release, as the primary means of achieving safety.

Implementing Codes and Standards

BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification
DOE IG Implementation Guide for Nonreactor Nuclear Safety Design Criteria and Explosive Safety Criteria, 2.3
DOE Order 420.1 Facility Safety, 4.1.1.2

Regulatory Basis

DOE/RL-96-0006 4.1.1.2 Defense in Depth-Prevention

Safety Criterion: 1.0 - 3

The risk, to an average individual within 1 mile of the RPP-WTP Controlled Area Boundary, of prompt fatalities that might result from an accident shall not exceed one-tenth of one percent (0.1%) of the sum of prompt fatality risks resulting from other accidents which members of the U.S. population generally are exposed.

Implementing Codes and Standards

BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification
BNFL-5193-SRD-01, Appendix D, Radiological Exposure Standards for the RPP-WTP Project

Regulatory Basis

DOE/RL-96-0006 3.1.2 Accident Risk Goal

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1.0 Radiological, Nuclear and Process Safety Objectives

Safety Criterion: 1.0 - 7

To compensate for potential human and equipment failures, a defense-in-depth strategy shall be applied to the facility commensurate with the hazards; such that, as appropriate to control the risk, safety is vested in multiple, independent safety provisions, no one of which is to be relied upon excessively to protect the public, the workers, or the environment. This strategy shall be applied to the design and operation of the facility.

Implementing Codes and Standards

ANSI/ANS 58.9-1981 Single Failure Criteria for Light Water Reactor Safety-Related Fluid Systems
BNFL-5193-SRD-01, Appendix B, Implementing Standard for Defense in Depth
DOE IG Implementation Guide for Nonreactor Nuclear Safety Design Criteria and Explosive Safety Criteria, 2.3
DOE Order 420.1 Facility Safety 4.1.1.2
IEEE 379-1994 Application of the Single Failure Criterion to Nuclear Power Generating Station Safety Systems

Regulatory Basis

DOE/RL-96-0006 4.1.1.1 *Defense in Depth-Defense in Depth*

Safety Criterion: 1.0 - 8

Structures, systems, and components (SSCs) that serve to provide reasonable assurance that the facility can be operated without undue risk to the health and safety of the workers and the public are classified as Important to Safety. It encompasses the broad class of facility features addressed (not necessarily explicitly) in the top-level radiological, nuclear, and process safety standards and principles that contribute to the safe operation and protection of workers and the public during all phases and aspects of facility operations (i.e., normal operation as well as accident mitigation). This definition includes not only those structures, systems, and components that perform safety functions and traditionally have been classified as safety class, safety-related or safety-grade, but also those that place frequent demands on or adversely affect the performance of safety functions if they fail or malfunction, i.e., support systems, subsystems, or components. Thus, these latter structures, systems, and components would be subject to applicable top-level radiological, nuclear, and process safety standards and principles to a degree commensurate with their contribution to risk. In applying this definition, it is recognized that during the early stages of the design effort all significant systems interactions may not be identified and only the traditional interpretation of Important to Safety, i.e., safety-related may be practical. However, as the design matures and results from risk assessments identify vulnerabilities resulting from non-safety-related equipment, additional structures, systems, and components should be considered for inclusion within this definition.

Important to Safety includes SSCs designated as Safety Design Class and Safety Design Significant. Safety Design Class SSCs includes those that, by performing their specified safety function, prevent workers or the maximally exposed member of the public from receiving a radiological [or chemical](#) exposure that exceeds the exposure standards defined in the SRD. ~~Safety Design Class also applies to those features that by functioning, prevent the worker or maximally exposed member of the public from receiving a chemical exposure that exceeds the ERPG 2 (AIHA 1988) chemical release standard.~~ Those features credited for the prevention of a criticality event are also designated as Safety Design Class.

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2.0 Radiological and Process Standards

Safety Criterion: 2.0 - 2

The following ~~dose~~-standards shall be applied to protect the public and workers from RPP-WTP chemical hazards.

Releases ~~impacting~~ exposing the offsite public ~~— to~~ to ERPG-2 ~~limits~~ concentrations (AIHA 19~~88~~99, ~~as amended~~)

Releases ~~impacting~~ exposing the co-located worker ~~— to~~ to ERPG-~~2~~3 ~~limits~~ concentrations (AIHA 19~~88~~99, ~~as amended~~)

Accidents affecting the facility worker that could cause in-patient hospitalization of at least 3 facility workers, or at least a single fatality.

Where ERPG values have not been published, the DOE Temporary Emergency Exposure Limits (TEELs) may be used as substitute ERPGs.

Implementing Codes and Standards

BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification

Safety Criterion: 2.0 - 3

In addition to the dose limits specified for the public in Safety Criterion 2.0-1 Table 2-1, the dose in any unrestricted area from external sources shall not exceed 0.002 rem in any one hour.

Implementing Codes and Standards

DOE G 441.1-2, Occupational ALARA Program Guide

Regulatory Basis

WAC 246-221 *Radiation Protection Standards* Location: 060 (1)

WAC 246-247 *Radiation Protection - Air Emissions* Location: Part 040 (2)

3.0 Nuclear and Process Safety

3.1 Hazards Analysis

Safety Criterion: 3.1 - 1

An initial process hazard analysis (hazard evaluation) shall be performed using acceptable industry practices. The analysis shall include consideration of both chemical and radiological hazards. The process hazard analysis shall be appropriate to the complexity of the process and shall identify, evaluate, and document the design features which control the hazards involved in the process.

The process hazard analysis shall be performed by a team with expertise in engineering and process operations, and the team shall include at least one member who has experience and knowledge specific to the process being evaluated. Also, one member of the team must be knowledgeable in the specific process hazard analysis methodology being used.

Implementing Codes and Standards

BNFL-5193-~~ISP~~SRD-01 ~~Integrated Safety Management Plan~~Safety Requirements Document

~~Section: 1.3.4 Process Hazards Analysis~~

~~Section: 5.5 Process Hazards Analysis~~ Appendix A. Implementing Standard Safety Standards and Requirements Identification

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (e)~~

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (p)~~

~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 50~~

DOE/RL-96-0006 5.2.2 Process Hazard Analysis

Safety Criterion: 3.1 - 2

A compilation of written process safety information appropriate to the stage of design being considered shall be completed ~~before conducting~~to support the process hazard analysis. The compilation of written process safety information enables the employer and the employees involved in operating the process to identify and understand the hazards posed by those processes involving radioactive materials and process chemicals considered to pose a hazard. This process safety information shall include information pertaining to the hazards of the materials used or produced by the process, information pertaining to the technology of the process, and information pertaining to the equipment in the process.

(1) Information pertaining to the hazards of the materials in the process including:

- (a) Toxicity information
- (b) Permissible exposure limits
- (c) Physical data
- (d) Reactivity data
- (e) Corrosivity data
- (f) Thermal and chemical stability data

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3.0 Nuclear and Process Safety

- (g) Hazardous effects of inadvertent mixing of different materials that could foreseeably occur

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3.0 Nuclear and Process Safety

- (2) Information pertaining to the technology of the process including at least the following:
 - (a) A block flow diagram or simplified process flow diagram
 - (b) Process chemistry
 - (c) Maximum intended inventory
 - (d) Safe upper and lower limits for such items as temperatures, pressures, flows or compositions
 - (e) An evaluation of the consequences of deviations, including those affecting the safety and health of employees
- (3) Information pertaining to the equipment in the process including:
 - (a) Materials of construction
 - (b) Process drawings or piping and instrument diagrams (P&IDs)
 - (c) Electrical classification
 - (d) Relief system design and design basis
 - (e) Ventilation system design
 - (f) Design codes and standards employed
 - (g) Material and energy balances
 - (h) Safety systems (e.g. interlocks, detection or suppression systems)

The records shall be maintained documenting that equipment complies with recognized and generally accepted good engineering practices. The safety information shall be kept up-to-date.

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan~~
~~Section: 5.1 Process Safety Information~~

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (d)~~
~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (p)~~
~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 48~~
DOE/RL-96-0006 5.2.1 Process Safety Information
DOE/RL-96-0006 5.2.2 Process Hazard Analysis

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3.0 Nuclear and Process Safety

Safety Criterion: 3.1 - 3

The process hazard analysis shall address:

- (1) The hazards of the process
- (2) Engineering and administrative controls applicable to the hazards and their interrelationships such as appropriate application of detection methodologies to provide early warning of releases. (Acceptable detection methods might include process monitoring and control instrumentation with alarms, and detection hardware.)
- (3) Consequences of failure of engineering and administrative controls
- (4) Facility siting
- (5) Human factors
- (6) A qualitative evaluation of a range of the possible safety and health effects of failure of controls on employees in the workplace
- (7) Common-mode and common-cause failure events

Implementing Codes and Standards

BNFL-5193-~~ISP~~[SRD](#)-01 ~~Integrated Safety Management Plan~~[Requirements Document](#)

~~Section: 1.3.4 Process Hazards Analysis~~

~~Section: 5.5 Process Hazards Analysis~~ [Appendix A. Implementing Standard for Safety Standards and Requirements Identification](#)

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (e)~~

~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 50~~

DOE/RL-96-0006 5.2.2 Process Hazard Analysis

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3.0 Nuclear and Process Safety

Safety Criterion: 3.1 - 4

The hazard analysis shall be performed in accordance with the following requirements:

- (1) The consequences of unmitigated releases of radioactive material and process chemicals considered to pose a hazard shall be evaluated.
- (2) The hazard analysis shall be based on an inventory of all radioactive and hazardous nonradioactive materials that are stored, utilized, or may be formed within the facility.
- (3) The hazard analysis shall identify energy sources or processes that might contribute to the generation or uncontrolled release of radioactive or process chemicals considered to pose a hazard. The hazard analysis shall estimate the consequences of accidents in which the facility or process and/or materials in the inventory are assumed to interact, react, or be released in a manner to produce a threat or challenge to the health and safety of individuals on-site and off site.
- (4) The risks that hazardous inventories and energy sources present shall be evaluated by consideration of normal operation (including startup, testing, and maintenance), anticipated operational occurrences, and accident conditions. The identification of anticipated operational occurrences and accident conditions shall consider internal events (i.e., equipment failure and human error), external events (e.g., nearby facilities and transportation), and natural phenomena.

Implementing Codes and Standards

BNFL-5193-~~ISP~~SRD-01 ~~Integrated~~ Safety ~~Management Plan~~[Requirements Document](#)

~~Section: 1.3.4 Process Hazards Analysis~~

~~Section: 5.5 Process Hazards Analysis~~ [Appendix A, Implementing Standard for Safety Standards and Requirements Identification](#)

Regulatory Basis

DOE/RL-96-0006 3.3.3 Accident Vulnerability Mitigation

DOE/RL-96-0006 5.2.2 Process Hazard Analysis

Safety Criterion: 3.1 - 5

A written plan of action shall be developed regarding employee participation in the conduct and development of process hazards analyses and on the development of process safety management. Employees and their representatives shall be consulted on the conduct and development of process hazards analyses and on the development of the other elements of process safety management. Employees and their representatives shall be provided access to process hazard analyses and other information developed related to process safety.

Implementing Codes and Standards

BNFL-5193-~~ISP~~SRD-01 ~~Integrated~~ Safety ~~Management Plan~~[Requirements Document](#)

[Appendix A, Implementing Standard for Safety Standards and Requirements Identification](#) ~~Section: 5.5 Process Hazards Analysis~~

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119(c)~~

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3.0 Nuclear and Process Safety

Safety Criterion: 3.1 - 6

A system shall be established to promptly address the hazard analysis team's findings and recommendations; assure that the recommendations are resolved in a timely manner; and that the resolution is documented. The contractor shall document what actions are to be taken; complete actions; develop a written schedule of when these actions are to be completed; communicate the actions to operating, maintenance and other employees whose work assignments are in the process and who may be affected by the recommendations or actions.

Implementing Codes and Standards

BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (e)~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 50~~

DOE/RL-96-0006 5.2.2 Process Hazard Analysis

Safety Criterion: 3.1 - 7

~~At least every five (5) years after the completion of the initial process hazard analysis, t~~The process hazard analysis shall be updated ~~and revalidated~~to reflect changes concurrently with the annual update of the FSAR by a qualified team, to assure that the process hazard analysis is consistent with the current process.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 3.3.3 Changes to Safety Documentation

Section: 5.6.2 Updating of the Hazard Analysis Report

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (e)~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 50~~

DOE/RL-96-0006 5.2.2 Process Hazard Analysis

Safety Criterion: 3.1 - 8

Employers shall retain process hazards analyses and updates or revalidations as well as the documented resolution of any recommendations for the life of the process.

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan~~

~~Section: 5.5 Process Hazards Analysis~~

~~Chapter: 8.0 Document Control and Maintenance~~

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (e)~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 50~~

4.0 Engineering and Design

Safety Criterion: 4.0 - 1

Formal configuration management shall be applied to all facility activities through deactivation of the RPP-WTP to ensure that programmatic objectives, including safety, are fully achieved. Work shall be performed and controlled according to pre-approved plans and procedures that clearly delineate responsibility. Documented records shall be retained.

Implementing Codes and Standards

ISO 10007 Quality Management - Guidelines for Configuration Management

Regulatory Basis

DOE/RL-96-0006 4.1.5.1 Configuration Management-Formal Configuration Management

Safety Criterion: 4.0 - 2

Written procedures shall be established and implemented to manage changes (except for “replacements in kind”) to process chemicals, technology, equipment, and procedures; and, changes to facilities that affect a covered process. The procedures shall assure that the following considerations are addressed prior to any change:

- (1) The technical basis for the proposed change
- (2) Impact of change on safety and health
- (3) Modifications to operating procedures
- (4) Necessary time period for the change
- (5) Authorization requirements for the proposed change

Employees involved in operating a process and maintenance and subcontract employees whose job tasks will be affected by a change in the process shall be informed of, and trained in, the change prior to start-up of the process or affected part of the process. If a change covered by this paragraph results in a change in the process safety information, such information shall be updated accordingly. If a change covered by this paragraph results in a change in operating procedures or practices, such procedures or practices shall be updated accordingly.

Implementing Codes and Standards

ISO 10007 Quality Management - Guidelines for Configuration Management

Regulatory Basis

~~29 CFR 1910 - Occupational Safety and Health Standards - Location: 119 (I)~~
DOE/RL-96-0006 5.2.9 Management of Change

<p style="text-align: center;">River Protection Project - Waste Treatment Plant Safety Requirements Document Volume II ABCN-24590-01-00006, Rev 0, Attachment 1, Page 12 of 40</p>

4.0 Engineering and Design

Safety technologies incorporated into the facility design should have been proven by experience or testing and should be reflected in approved codes and standards. Significant new design features should be introduced only after thorough research and model or prototype testing at the component, system, or facility level, as appropriate, to achieve the necessary level of confidence that the design feature will perform as expected.

Implementing Codes and Standards

ACI 318-99 Building Code Requirements for Structural Concrete
ACI 318R-99 Commentary on Building Code Requirements for Structural Concrete
ACI 349-97 Code Requirements for Nuclear Safety-Related Concrete Structures
ACI 349R-97 Commentary on Code Requirements for Nuclear Safety-Related Concrete Structures
AISC MO16-89 Manual for Steel Construction - Allowable Stress Design, Ninth Edition
ANSI/AISC N690-94 Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities
ASCE 4-98 (Draft) Seismic Analysis of Safety-Related Nuclear Structures and Commentary
ASCE 7-95 Minimum Design Loads for Buildings and Other Structures
DOE-STD 1020-94 (Change 1, 1996) Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities
1997 UBC Uniform Building Code
DOE Newsletter (Interim Advisory on Straight Winds and Tornados) Dated 1/22/98
ACI 530-95, Building Code Requirements for Masonry Structures and Commentary
BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification
ISO 10007 Quality Management- Guidelines for Configuration Management
ASTM D3740, Standard Practice for Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D2922, Standard Test Method for Laboratory Determination of Moisture Content of Soil
ASTM D3017, Standard Test Method for Water Content of Soil and Rock in Place by Nuclear Methods

Regulatory Basis

<i>DOE/RL-96-0006</i>	<i>4.1.2.4 Safety Responsibility-Operating Experience and Safety Research</i>
<i>DOE/RL-96-0006</i>	<i>4.1.5.1 Configuration Management-Formal Configuration Management</i>
<i>DOE/RL-96-0006</i>	<i>4.1.6.2 Quality Assurance-Established Techniques and Procedures</i>
<i>DOE/RL-96-0006</i>	<i>4.2.2.1 Proven Engineering Practices/Margins-Proven Engineering Practices</i>
<i>DOE/RL-96-0006</i>	<i>4.2.2.3 Proven Engineering Practices/Margins-Safety System Design and Qualification</i>
<i>DOE/RL-96-0006</i>	<i>4.2.5.1 Inherent/Passive Safety Characteristics-Safety Margin Enhancement</i>

Safety Criterion: 4.1 - 3

This criterion addresses natural phenomena hazards (NPH) design for structures, systems, and components (SSCs) that are Important to Safety and have NPH safety functions.

SSCs designated as Important to Safety (i.e., Safety Design Class and Safety Design Significant) shall be designed to withstand the effects of NPH events such as earthquakes, wind, and floods without loss of capability to perform specified safety functions required as the result of the NPH events. This includes both the front line and support systems that must function for a NPH event such that the public, collocated worker, or facility worker exposure standards of Safety Criterion 2.0-1 or 2.0-2 are not exceeded.

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4.0 Engineering and Design

SSCs that are designated Safety Design Class (excepting those so designated based solely on chemical hazards) and that are required to perform a safety function as a result of a given NPH shall be designed to withstand the NPH loadings of that NPH as provided in Table 4-1. These SSCs are designated Seismic Category I (SC-I) for earthquakes and Performance Category 3 (PC-3) for other NPH. SSCs designated as SDC based solely on a safety function relative to chemical hazards shall be designated as SC-III for earthquakes, and shall be designed to meet PC-3 requirements for other NPH events.

SSCs that are designated Safety Design Significant whose continued function is not required for an NPH event, but whose failure as a result of an NPH event could reduce the functioning of a Safety Design Class SSC such that exposure standards might be exceeded, shall be designed to withstand the NPH loadings of that NPH as provided in Table 4-1. For these SSCs, however, for seismic response only, credit may be taken for inelastic energy absorption per Table 2-4 of DOE-STD-1020-94. These SSCs are designated SC-II for earthquakes and PC-3 for other NPH. SSCs designated as SDS based solely on a safety function relative to chemical hazards shall be designated as SC-III for earthquakes, and shall be designed to meet PC-3 requirements for other NPH events.

For any SSC included under this criterion, other NPH loads (for which the SSC has no safety function) may be taken from Safety Criterion 4.1-4 and Table 4-2 in lieu of Safety Criterion 4.1-3 and Table 4-1. SSCs designated as SDS based solely on safeguarding a safety function relative to chemical hazards shall be designated SC-III for earthquakes, and shall be designed to meet PC-2 requirements for other NPH events.

Table 4-1. Natural Phenomena Design Loads for Important to Safety SSCs with NPH Safety Functions

Hazard	Load	Source Document for Load
Seismic	DBE with 0.26 g horizontal PGA and 0.18 g vertical PGA See Figures 4-1 and 4-2	WHC-SD-W236A-TI-002 ^a DOE-STD-1020-94 ^b
Straight wind	111 mi/hr , 3-second gust, at 33 ft above ground, Importance factor, I=1.0	DOE Newsletter ^c
Wind Missile	2x4 timber plank, 15 lb at 50 mi/hr (horiz), Max height 30 ft	DOE-STD-1020-94 ^b
Tornado and Tornado Missiles	Not Applicable	DOE-STD-1020-94 ^b
Volcanic ash	12.5 lb/ft ²	HNF-SD-GN-ER-501 ^d
Flooding	Dry site for river flooding Local precipitation: 4 in. for 6 hours	HNF-SD-GN-ER-501 ^d
Snow	15.0 lb/ft ² snow load	HNF-SD-GN-ER-501 ^d

^a Geomatrix, 1996, *Probabilistic Seismic Hazard Analysis DOE Hanford Site, Washington*, WHC-SD-W236A-TI-002, Rev.1A, prepared for Westinghouse Hanford Company, Richland, Washington.

^b DOE STD-1020-94, (1996, Change 1) *Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities*, U.S. Department of Energy, Washington, D.C., 1996.

^c DOE Newsletter (Interim Advisory on Straight Winds and Tornadoes) Dated 1/22/98.

^d HNF-SD-GN-ER-501, Rev. 1, "Natural Phenomena Hazards, Hanford Site, South-Central Washington", Westinghouse Hanford Company.

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4.0 Engineering and Design

Implementing Codes and Standards

ACI 349-97 Code Requirements for Nuclear Safety-Related Concrete Structures
ACI 349R-97 Commentary on Code Requirements for Nuclear Safety-Related Concrete Structures
ANSI/AISC N690-94 Specification for the Design, Fabrication, and Erection of Steel Safety-Related Structures for Nuclear Facilities
ASCE 4-98 (Draft) Seismic Analysis of Safety-Related Nuclear Structures and Commentary
ASCE 7-95 Minimum Design Loads for Buildings and Other Structures
DOE-STD 1020-94 (Change 1, 1996) Natural Phenomena Hazards Design and Evaluation Criteria for Department of Energy Facilities
IEEE 344-1987 Recommended Practice for Seismic Qualification of Class 1E Equipment for Nuclear Power Generating Stations
1997 UBC Uniform Building Code
DOE Newsletter (Interim Advisory on Straight Winds and Tornadoes) Dated 1/22/98
BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification

Regulatory Basis

DOE/RL-96-0006 4.2.2.2 *Proven Engineering Practices/Margins-Common-Mode/Common-Cause Failure*

Safety Criterion: 4.1 - 4

This criterion addresses natural phenomena hazards (NPH) design for structures, systems, and components (SSCs) without NPH safety functions.

SSCs that may be important to the safety of the RPP-WTP shall be designed to withstand the effects of NPH such as earthquakes, wind, and floods. The SSCs included under this criterion are:

1. SSCs Important to Safety (either Safety Design Class or Safety Design Significant) that do not have an NPH safety function-;
2. SSCs that are not Important to Safety and that have significant inventories of radioactive or hazardous materials but in amounts less than quantities that might lead to an Important to Safety designation-; and
3. SSCs that are important to safety because of their function to protect workers and members of the public from exposure to chemical hazards.

These SSCs are designated Seismic Category III (SC-III) for earthquakes and Performance Category 2 (PC-2) for other NPH.

SSCs included under this criterion shall be designed to withstand the NPH loadings as provided in Table 4-2.

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4.0 Engineering and Design

Safety Criterion: 4.3 - 7

The control room or control area shall be designed to permit occupancy and actions to be taken to monitor the facility safely during normal operations, and to provide safe control of the facility for anticipated operational occurrences and accident conditions. If credit is taken for operator action to satisfy the accident exposure standards of Safety Criteria 2.0-1 and/or 2.0-2, adequate radiation protection shall be provided to permit access and occupancy of the control room under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body gamma and 30 rem beta skin for the duration of the accident. For occurrences and accidents involving chemical release, provisions shall be made such that the operator exposure does not exceed the worker exposure standards of ~~Safety Criterion 2.0-2~~ [29 CFR 1910.120 for emergency exposure](#).

Consideration shall also be given to accidents at nearby facilities if operator action is required to safely control the processes and bring them to a safe state.

The need for an alternate system that would allow the processes to be placed in a safe state in the event the primary control area is uninhabitable shall be evaluated.

Implementing Codes and Standards

ASME N509-89 Nuclear Power Plant Air Cleaning Units and Components

ASME N510-1989 (Rev 1995) Testing of Nuclear Air Cleaning Systems

NUREG-0800 Standard Review Plan, Section 6.4, Section II, Items 1-5.

BNFL-5193-SRD-01, Appendix A, Implementing Standard for Safety Standards and Requirements Identification

Regulatory Basis

DOE/RL-96-0006 4.2.4.1 *Emergency Preparedness-Support Facilities*

DOE/RL-96-0006 4.2.6.2 *Human Factors-Instrumentation and Control Design*

[29 CFR 1910.120](#) [Hazardous Waste Operations and Emergency Response](#)

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4.0 Engineering and Design

Safety Criterion: 4.5 - 21

The fire protection program shall be under the direction of an individual who has been delegated authority commensurate with the responsibilities of the position and who has available staff knowledgeable in both fire protection and nuclear safety.

Implementing Codes and Standards

DOE G-440.1 Implementation Guide for use with DOE Orders 420.1 and 440.1 Fire Safety Program
NFPA 801-95 Standard for Facilities Handling Radioactive Materials

Safety Criterion: 4.5 - 22

The facility should have on file, and ready to use, a Pre-Fire Plan. The Pre-Fire Plan should assign individual and alternate responsibilities for responding to a fire alarm or call; assessing the situation, suppressing incipient fires, assembling the emergency service organization, personnel evacuation, orderly shutdown of processes, and safeguarding (if necessary) and control of radioactive and hazardous material.

The plan should clearly indicate, preferably with the help of site plans and drawings, the locations of the fire department-compatible connections and fire-fighting equipment, such as portable extinguishers, automatic fire suppression systems, sectional valves, standpipes, hydrants, and hoses. It should also indicate the areas of concentrations of combustibles, storage of flammable and combustible liquids, and areas where use of water for fire suppression is restricted because of nuclear criticality or other concerns.

The Pre-Fire Plan should be prepared in consultation and coordination with the Hanford Site fire department. The Hanford Site fire department personnel should be given familiarization tours of the facility at least once a year.

Implementing Codes and Standards

DOE G-440.1 Implementation Guide for use with DOE Orders 420.1 and 440.1 Fire Safety Program
NFPA 801-95 Standard for Facilities Handling Radioactive Materials

Safety Criterion: 4.5 - 23

Hot work permits shall be issued for hot work operations conducted in or near the facility. The permit shall document that applicable fire prevention and protection requirements have been implemented prior to beginning the hot work operations; it shall indicate the date(s) authorized for hot work; and identify the object on which hot work is to be performed. The permit shall be kept on file until completion of the hot work operations.

Implementing Codes and Standards

DOE G-440.1 Implementation Guide for use with DOE Orders 420.1 and 440.1 Fire Safety Program
NFPA 801-95 Standard for Facilities Handling Radioactive Materials

Regulatory Basis

~~29 CFR 1910 - Occupational Safety and Health Standards - Location: 119 (k)~~
DOE/RL-96-0006 5.2.8 Hot Work Control

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6.0 Startup

6.0 Startup

Safety Criterion: 6.0 - 1

A pre-operational testing program shall be established and followed to demonstrate that Important to Safety structures, systems and components have been properly constructed and can perform their specified functions. The program shall provide for the detection, tracking, and correction of deficiencies.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 1.3.14 Startup Testing
Section: 3.14 Startup Testing and Operation
Section: 5.6.4 Startup Review

Regulatory Basis

~~29 CFR 1910 - Occupational Safety and Health Standards - Location: 119(j)(6)~~
DOE/RL-96-0006 4.2.8.1 Pre-Operational Testing-Testing Program

Safety Criterion: 6.0 - 2

Procedures for normal facility and systems operation and for functional tests to be performed during the operating phase shall be validated as part of the pre-operational testing program.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 1.3.14 Startup Testing
Section: 3.14 Startup Testing and Operation
Section: 5.6.4 Startup Review

Regulatory Basis

DOE/RL-96-0006 4.2.8.2 Pre-Operational Testing-Operational Systems and Functional Testing
Procedures Validation

Safety Criterion: 6.0 - 3

During pre-operational testing, detailed diagnostic data shall be collected on systems and components designated as Important to Safety and the initial operating parameters of the systems and components shall be recorded.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 1.3.14 Startup Testing
Section: 3.14 Startup Testing and Operation
Section: 5.6.4 Startup Review

Regulatory Basis

DOE/RL-96-0006 4.2.8.3 Pre-Operational Testing-Safety Systems Data

<p style="text-align: center;">River Protection Project - Waste Treatment Plant Safety Requirements Document Volume II AB CN-24590-01-00006, Rev 0, Attachment 1, Page 18 of 40</p>
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6.0 Startup

Safety Criterion: 6.0 - 4

During the pre-operational testing program, the as-built operating characteristics of process systems, and systems and components designated as Important to Safety shall be determined and documented. Operating points shall be adjusted to conform to values in the design basis. Training procedures and limiting conditions for operation shall be modified, if necessary, to accurately reflect the operating characteristics of the systems and components as built.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.14 Startup Testing

Section: 3.14 Startup Testing and Operation

Section: 5.6.4 Startup Review

Regulatory Basis

DOE/RL-96-0006

4.2.8.4 *Pre-Operational Testing-Design Operating Characteristics*

Safety Criterion: 6.0 - 5

A pre-startup safety review shall be performed. The pre-startup safety review shall confirm that, prior to the introduction of radioactive or process chemicals considered to pose a hazard to a process, construction and equipment is in accordance with design specifications; safety, operating, maintenance, and emergency procedures are in place and are adequate; a process hazard analysis has been performed and recommendations have been resolved or implemented before startup; and training of each employee involved in operating a process has been completed.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.14 Startup Testing

Section: 5.6.4 Startup Review

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (i)~~

DOE/RL-96-0006 4.3.1.4 *Conduct of Operations-Readiness*

DOE/RL-96-0006 5.2.6 *Pre-startup Safety Review*

<p style="text-align: center;">River Protection Project - Waste Treatment Plant Safety Requirements Document Volume II ABCN-24590-01-00006, Rev 0, Attachment 1, Page 19 of 40</p>

7.0 Management and Operations

7.1 Management and Organization/Staffing

Safety Criterion: 7.1 - 1

Safety management shall oversee the implementation of the risk management program elements. A qualified person shall be assigned the overall responsibility for the development, implementation, and integration of the risk management program elements. If responsibility for implementing individual requirements of the risk management program is assigned to other persons, the names or positions of these people shall be documented and the lines of authority defined through an organization chart or similar document.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 6.1 Integration into Work Planning and Performance

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (p)~~
~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 15~~

Safety Criterion: 7.1 - 2

When selecting a subcontractor, information regarding the subcontract employer's safety performance and programs shall be obtained and evaluated. Subcontract employees shall be informed of the known potential fire, explosion, or toxic release hazards related to the subcontractor's work and the process. The applicable provisions of the emergency plan shall be explained to the subcontractors. Safe work practices to control the entrance, presence, and exit of subcontract employers and employees in radioactive or hazardous process areas shall be developed and implemented. The performance of subcontract employers with regard to safety shall be periodically evaluated and a subcontract employee injury and illness log related to the subcontractor's work in process areas shall be maintained.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.2 Control of Subcontractors

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (h)~~
DOE/RL-96-0006 5.2.5 Subcontractors

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7.0 Management and Operations

Safety Criterion: 7.2 - 3

Each employee involved in operating a process shall be trained in an overview of the process and in the operating procedures/instructions. The training shall include emphasis on the specific safety and health hazards, operating limits, emergency operations including shutdown, and safe work practices applicable to the employee's job tasks.

Refresher training shall be provided at least every three years, and more often if necessary, to each employee involved in operating a process to assure that the employee understands and adheres to the current operating procedures/instructions of the process and is proficient in the procedures to follow if conditions exceed the design basis of the facility.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 5.6.3 Development of the Operator Training Program

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (g)~~

~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 54~~

DOE/RL-96-0006 4.3.4.1 Training and Qualifications-Personnel Training

DOE/RL-96-0006 4.3.4.3 Training and Qualifications-Conditions Beyond Design Basis

DOE/RL-96-0006 5.2.4 Training

WAC 246-247 Radiation Protection - Air Emissions Location: Part 075 (12)

Safety Criterion: 7.2 - 4

Up-to-date records of training status shall be maintained which contain the names of the trained employees, the types of training, the dates of training, and the means used to verify that the employees understood the training.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 3.15 Training and Qualification

Chapter: 8.0 Document Control and Maintenance

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (g)~~

~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 54~~

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7.0 Management and Operations

Safety Criterion: 7.2 - 5

Written procedures/instructions that provide clear direction for safely conducting activities involving radioactive or hazardous materials shall be developed and implemented for each phase of the facility life. The procedures/instructions shall address at least the following elements:

- (1) Steps for each operating phase:
 - (a) Initial startup
 - (b) Normal operations
 - (c) Temporary operations
 - (d) Emergency shutdown including the conditions under which emergency shutdown is required, and the assignment of shutdown responsibility to qualified operators to ensure that emergency shutdown is executed in a safe and timely manner
 - (e) Emergency operations
 - (f) Normal shutdown
 - (g) Startup following a turnaround, or after an emergency shutdown
- (2) Operating limits:
 - (a) Consequences of deviation
 - (b) Steps required to correct or avoid deviation
- (3) Safety and health considerations:
 - (a) Properties of, and hazards presented by, the chemicals used in the process
 - (b) Precautions necessary to prevent exposure, including engineering controls, administrative controls, and personal protective equipment
 - (c) Control measures to be taken if physical contact or airborne exposure occurs
 - (d) Quality control for raw materials and control of hazardous chemical inventory levels
 - (e) Any special or unique hazards
- (4) Safety systems and their functions

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.6.1 Procedure Development

Regulatory Basis

~~29 CFR 1910 — Occupational Safety and Health Standards — Location: 119 (f)~~

~~40 CFR 68 — Chemical Accident Prevention Provisions — Location: 52~~

DOE/RL-96-0006 4.3.2.2 Radiation Protection-Procedures and Monitoring

DOE/RL-96-0006 5.2.3 Operating Procedures

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7.0 Management and Operations

Safety Criterion: 7.2 - 6

Operating procedures shall be readily accessible to employees who work in or maintain a process with radioactive or hazardous materials.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.6.1 Procedure Development

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (f)~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 52~~

Safety Criterion: 7.2 - 7

Operating procedures shall be reviewed as often as necessary to assure that they reflect current operating practice, including changes that result from changes in process chemicals, technology, and equipment, and changes to facilities. These procedures shall be certified annually that they are current and accurate.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.3 Configuration Management
Section: 5.6.1 Procedure Development

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (f)~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 52~~

Safety Criterion: 7.2 - 8

Safe work practices providing for the control of hazards during operations such as lockout/tagout; confined space entry; opening process equipment or piping; and control over entrance into a facility by maintenance, subcontractor, laboratory, or other support personnel shall be developed. These safe work practices shall apply to employees and subcontractor employees.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.4 Safety/Quality Culture
Section: 5.2 Control of Subcontractors
Section: 5.6.6 Hot Work Operations

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (f)~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 52~~

<p style="text-align: center;">River Protection Project - Waste Treatment Plant Safety Requirements Document Volume II ABCN-24590-01-00006, Rev 0, Attachment 1, Page 23 of 40</p>

7.0 Management and Operations

Safety Criterion: 7.3 - 6

Processes to detect and prevent quality problems shall be established and implemented. Items, services, and processes that do not meet established requirements shall be identified, controlled, and corrected. Correction shall include identifying the causes of problems and preventing recurrence. Item characteristics, process implementation, and other quality-related information shall be reviewed and the data analyzed to identify items, services, and processes needing improvement.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 2.2 Compliance with 10 CFR 830.120, "Quality Assurance Requirements"

Regulatory Basis

<i>10 CFR 830.120</i>	<i>Quality assurance requirements</i>	<i>Location: (c)(1)(iii)</i>
<i>DOE/RL-96-0006</i>	<i>4.1.4.1 Safety/Quality Culture-Safety/Quality Culture</i>	

Safety Criterion: 7.3 - 7

Inspection and testing of specified items, services, and processes shall be conducted using established acceptance and performance criteria. Equipment used for inspections and tests shall be calibrated and maintained.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.11 Quality Levels

Regulatory Basis

<i>10 CFR 830.120</i>	<i>Quality assurance requirements</i>	<i>Location: (c)(2)(iv)</i>
<i>29 CFR 1910</i>	<i>Occupational Safety and Health Standards</i>	<i>Location: 119(j)(6)</i>

Safety Criterion: 7.3 - 8

Managers shall assess their management processes. Problems that hinder the organization from achieving its objectives shall be identified and corrected.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Chapter: 10.0 Assessments

Regulatory Basis

<i>10 CFR 830.120</i>	<i>Quality assurance requirements</i>	<i>Location: (c)(3)(i)</i>
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7.0 Management and Operations

Safety Criterion: 7.3 - 9

Independent assessment shall be planned and conducted to measure item and service quality, to measure the adequacy of work performance, and to promote improvement. The group performing independent assessments shall have sufficient authority and freedom from the line to carry out its responsibilities. Persons conducting independent assessments shall be technically qualified and knowledgeable in the areas assessed.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Chapter: 10.0 Assessments

Regulatory Basis

10 CFR 830.120 *Quality assurance requirements* Location: (c)(3)(ii)

Safety Criterion: 7.3 - 10

Compliance audits shall be performed at least every three years to verify that the procedures and practices developed to ensure nuclear and process safety are adequate and are being followed. The compliance audit shall be conducted by at least one person knowledgeable in the process. A report of the findings of the audit shall be developed. An appropriate response shall be determined and documented for each of the findings of the compliance audit, and it shall be documented when deficiencies have been corrected. Employers shall retain the two most recent compliance audit reports.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.4 Compliance Audits
Chapter: 8.0 Document Control and Maintenance

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (e)~~
~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 58~~
DOE/RL-96-0006 5.2.12 *Compliance Audits*

Safety Criterion: 7.3 - 11

Procured items and services shall meet established requirements and perform as specified. Prospective suppliers shall be evaluated and selected on the basis of specified criteria. Processes to ensure that approved suppliers continue to provide acceptable items and services shall be established and implemented.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 2.2 Compliance with 10 CFR 830.120, “Quality Assurance Requirements”

Regulatory Basis

10 CFR 830.120 *Quality assurance requirements* Location: (c)(2)(iii)
~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (j) (6)~~

7.4 Unreviewed Safety Questions

Safety Criterion: 7.4 - 1

A safety evaluation shall be performed to determine whether a situation involves an unreviewed safety question (USQ) for:

- (1) Temporary or permanent changes in the facility as described in the existing authorization basis
- (2) Temporary or permanent changes in the procedures as derived from existing authorization basis
- (3) Tests or experiments not described in the existing authorization basis

A situation involves a USQ if:

- 1) the probability of occurrence or the radiological or chemical consequences of an accident or malfunction of equipment Important to Safety, previously evaluated in the facility safety analyses or other related safety analysis and evaluations not yet included in the updated facility analysis, may be increased
- 2) a possibility for an accident or equipment malfunction of a different type than any evaluated previously in the facility safety analyses or other related safety analysis and evaluations not yet included in the updated facility safety analysis, may be created
- 3) any margin of safety is reduced

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.16.4 Unreviewed Safety Questions

Regulatory Basis

DOE/RL-96-0006	4.4.4	Unresolved Safety Questions
DOE/RL-96-0006	5.2.9	Management of Change

Safety Criterion: 7.4 - 2

Regulatory approval shall be obtained for situations determined to involve an unreviewed safety question or a change in a technical safety requirement, prior to initiating the activity, if the initiation of the activity would itself involve a USQ, or implementing the proposed change.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.16.4 Unreviewed Safety Questions

Regulatory Basis

DOE/RL-96-0006	4.4.4	Unresolved Safety Questions
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7.6 Maintenance

Safety Criterion: 7.6 - 1

A maintenance program for the facility shall be developed and implemented using a tailored approach.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 4.2.1 Engineered Features

Safety Criterion: 7.6 - 2

The maintenance program shall contain provisions sufficient to preserve, predict, and restore the availability, operability, and reliability of structures, systems, and components designated as Important to Safety.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.13 Reliability, Availability, Maintainability, and Inspectability (RAMI)

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119(j)(5)~~
DOE/RL-96-0006 4.3.5.1 Operational Testing, Inspection, and Maintenance

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7.0 Management and Operations

Safety Criterion: 7.6 - 4

The maintenance program shall address each of the following elements:

- (1) Organization and administration
- (2) Maintenance training and qualification
- (3) Maintenance facilities, equipment, and tools
- (4) Types of maintenance
- (5) Maintenance procedures and other work-related documents
- (6) Planning, scheduling, and coordinating maintenance activities
- (7) Control of maintenance activities
- (8) Post-maintenance testing
- (9) Procurement of parts, materials, and services
- (10) Material receipt, inspection, handling, storage, retrieving, and issuance
- (11) Control and calibration of measuring and test equipment
- (12) Maintenance tools and equipment control
- (13) Documented facility condition inspections to identify and address aging effects
- (14) Management involvement with facility operations
- (15) Maintenance history and trending
- (16) Analysis of maintenance-related problems
- (17) Modification work.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.11 Quality Levels

Section: 4.2.2 Training and Procedures

Section: 5.3 Configuration Management

Section: 5.4 Compliance Audits

Section: 5.6.5 Mechanical Integrity

Chapter: 11.0 Organization Roles, Responsibilities, and Authorities

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (j) (2)~~

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (j) (3)~~

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (j) (4)~~

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (j) (6)~~

40 CFR 61 National Emission Standards for Hazardous Air Pollutants Location: 14 (b)

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 56~~

DOE/RL-96-0006 4.3.5.1 Operational Testing, Inspection, and Maintenance ~~e-Operational Testing, Inspection~~

DOE/RL-96-0006 5.2.7 Mechanical Integrity

WAC 246-247 Radiation Protection - Air Emissions Location: Part 075 (12)

7.7 Reporting and Incident Investigation

Safety Criterion: 7.7 - 1

Each incident which resulted in, or could reasonably have resulted in a major accident shall be investigated. An incident investigation shall be initiated as promptly as possible, but not later than 48 hours following the incident.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.17 Incident Investigations

Section: 5.6.7 Investigations of Incidents

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (m)~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 60~~

DOE/RL-96-0006 5.2.10 Incident Investigation

Safety Criterion: 7.7 - 2

An incident investigation team shall be established and consist of at least one person knowledgeable in the process involved, including a subcontract employee if the incident involved work of the subcontractor, and other persons with appropriate knowledge and experience to thoroughly investigate and analyze the incident. A report shall be prepared at the conclusion of the investigation which includes at a minimum:

- (1) Date of incident
- (2) Date investigation began
- (3) A description of the incident
- (4) The factors that contributed to the incident
- (5) Any recommendations resulting from the investigation

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.17 Incident Investigations

Section: 5.6.7 Investigations of Incidents

Chapter: 8.0 Document Control and Maintenance

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (m)~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 60~~

DOE/RL-96-0006 5.2.10 Incident Investigation

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7.0 Management and Operations

Safety Criterion: 7.7 - 3

A system shall be established to promptly address and resolve the incident report findings and recommendations. Resolutions and corrective actions shall be documented. The report shall be submitted to the regulator for evaluation and in support of regulatory oversight. The report shall be reviewed with all affected personnel whose job tasks are relevant to the incident findings including subcontract employees where applicable. Incident investigation reports shall be retained for five years.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.6.7 Investigations of Incidents

Regulatory Basis

~~29 CFR 1910—Occupational Safety and Health Standards—Location: 119 (m)~~
~~40 CFR 68—Chemical Accident Prevention Provisions—Location: 60~~
DOE/RL-96-0006 5.2.10 Incident Investigation

Safety Criterion: 7.7 - 4

The Facility Manager shall categorize reportable incidents as soon as reasonably possible and in all cases within 2 hours of identification of the event or condition. If categorization is not clear, the occurrence shall be conservatively categorized at the higher level being considered. The occurrence categorization shall be elevated, maintained, or lowered, as appropriate, as further information is obtained.

Reportable occurrences shall be categorized in accordance with the following guidance:

“Emergencies” are the most serious reportable occurrences and they require an increased alert status for on-site personnel and, in specified cases, for off-site authorities. Emergencies require a time-urgent notification as part of the facility’s comprehensive emergency management program.

“Unusual Occurrences” are the category of non-emergency reportable occurrences that exceed the off-normal occurrence threshold and have significant impact or potential for impact on safety, the environment, health, safeguards and security, or operations.

“Off-Normal Occurrences” are the category of abnormal or unplanned reportable occurrences that adversely affect, potentially affect, or are indicative of degradation in the level of safety, safeguards and security, environmental or health protection, performance or operation of the facility.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 5.6.7 Investigations of Incidents

7.8 Emergency Preparedness

Safety Criterion: 7.8 - 1

An emergency response program shall be developed, documented, and implemented for the purpose of protecting public health and the environment. The program shall include the following elements:

- (1) An emergency response plan.
- (2) Emergency Planning Implementing Procedures to ensure the timely and effective implementation of the provisions of the emergency plan.
- (3) A facility emergency response organization, with clearly defined roles, responsibilities and authorities.
- (4) A training program that provides initial and annual refresher training for facility response personnel, general employees, and response personnel from other agencies.
- (5) Program administration to include maintenance of technical support documents, plans, and procedures, the coordination of activities, and maintenance of appropriate auditable records.
- (6) Adequate emergency facilities and equipment to support response.
- (7) The scope of the program will be designed to be commensurate with the hazards present at the facility and will be determined by performing an assessment of the hazards.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.10 Emergency Preparedness
Chapter: 8.0 Document Control and Maintenance

Regulatory Basis

~~40 CFR 68 — Chemical Accident Prevention Provisions — Location: 95~~
~~40 CFR 68 — Chemical Accident Prevention Provisions — Location: 180~~
WAC 246-247 Radiation Protection - Air Emissions Location: Part 075 (12)

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7.0 Management and Operations

Safety Criterion: 7.8 - 2

The Emergency Management Program will be documented in an emergency plan which describes the provisions for responses to Operational Emergencies. The emergency response plan will address the following program elements

- (1) The establishment and maintenance of a facility emergency response organization with clearly specified authorities and responsibilities for emergency response and mitigation.
- (2) Provisions for interfaces and coordination with Hanford Site and offsite agencies in the areas of planning, preparedness, response, and recovery.
- (3) A description of the hazards and potential consequences resulting from analyzed accidents.
- (4) Identify and describe the capabilities for the detection of emergency events, the methodology for determining event severity and the basis for declaring an emergency.
- (5) The methods to be used to provide notification of an emergency event to Hanford Site organizations, offsite response agencies, and Federal, state and local regulatory agencies.
- (6) Provisions for assessing the consequences resulting from the release of hazardous materials.
- (7) A description of protective actions for responders, workers, and the public, to include provisions for sheltering, evacuation, and personnel accountability.
- (8) Medical support during emergency response, to include provisions for ambulance/hospital services and decontamination of injured personnel.
- (9) Methodology for the safe-shut down of the facility, reentry to the facility during or after emergency response and provisions for developing a recovery strategy following an accident.
- (10) A public information program designed to provide the public, media and employees with accurate and timely information.
- (11) A training program will be designed to ensure that personnel are prepared to respond to, manage, mitigate, and recover from emergencies associated with facility operations.
- (12) Provisions for the administration of the program, to include a designated program administrator, program assessment and issue resolution, the development and maintenance of technical support documents, plans, and procedures, the coordination of activities, and maintenance of appropriate auditable records.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Section: 3.10 Emergency Preparedness

Regulatory Basis

~~29 CFR 1910 Occupational Safety and Health Standards Location: 119 (n)~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 95~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 180~~

DOE/RL-96-0006 4.1.2.3 Safety Responsibility-Site and Technical Support

DOE/RL-96-0006 5.2.11 Emergency Planning and Response

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7.0 Management and Operations

Safety Criterion: 7.8 - 3

Emergency plans shall be prepared before the startup of the facility, and shall be exercised periodically to ensure that protection measures can be implemented in the event of an accident that results in, or has the potential for, unacceptable releases of radioactive materials within and beyond the facility control perimeter.

A determination shall be made of the size of the geographic area surrounding the facility, known as the Emergency Planning Zone (EPZ), within which special planning and preparedness activities will be performed to reduce the potential health and safety impacts from an event involving hazardous materials. The extent of planning and preparedness necessary shall correspond to the type and scope of hazards present and the potential consequences of events.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 1.3.18 Emergency Planning

Section: 3.10 Emergency Preparedness

Regulatory Basis

DOE/RL-96-0006 4.3.3.3 *Emergency Preparedness-Establishment and Continued Exercise of Emergency Plans*

Safety Criterion: 7.8 - 4

The results of analyses of the facility response to accidents with the potential for releases resulting in doses in excess of Environmental Protection Agency and the State of Washington emergency clean-up standards, beyond the RPP-WTP controlled area boundary shall be used in preparing emergency operating procedures which will contain specific instructions for facility operations personnel on the shutdown of facility processes and the mitigation of accidents for all identified off-normal and emergency conditions.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 3.10 Emergency Preparedness

Regulatory Basis

DOE/RL-96-0006 4.3.3.2 *Emergency Preparedness-Accident Management Strategy*

Safety Criterion: 7.8 - 5

The emergency response plan shall be coordinated with the DOE Hanford Site and local community emergency response plans.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 3.10 Emergency Preparedness

Regulatory Basis

~~40 CFR 68~~ ~~Chemical Accident Prevention Provisions~~ ~~Location: 95~~

DOE/RL-96-0006 4.3.3.1 *Emergency Preparedness-Offsite Measures*

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9.0 Documentation and Submittals

Safety Criterion: 9.1 - 6

All responsibilities concerning the facility as identified in the approved SAR shall be carried out.

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Section: 3.2 Safety Responsibilities

Safety Criterion: 9.1 - 7

The hazard analysis shall be submitted for approval as part of the SAR. ~~Hazard analysis data shall also be submitted as part of the Risk Management Plan, as discussed in Safety Criterion 9.3.1.~~

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan

Chapter: 9.0 Scheduling of Safety-Related Activities

Regulatory Basis

~~40 CFR 68 — Chemical Accident Prevention Provisions — Location: 175~~

9.3 Risk Management Plan (this section has been deleted)

Safety Criterion: 9.3 - 1

~~A single risk management plan (RMP) shall be submitted to the EPA. The plan shall include:~~

~~(1) An executive summary~~

~~(2) A registration form covering all regulated substances handled in covered processes~~

~~(3) Offsite consequence analyses (one worst case scenario to represent all toxics held above the threshold quantity, one worst case scenario to represent all regulated flammables held above the threshold quantities, alternative release scenarios for each regulated toxic substance held above the threshold quantity and one alternative release scenario to represent all regulated flammable substances held above the threshold quantity)~~

~~(4) The five-year accident history~~

~~(5) Prevention program elements described below:~~

~~(a) SIC code for the process~~

~~(b) Name(s) of the substance(s) covered~~

~~(c) Date on which the safety information was last reviewed or revised~~

~~(d) Date of completion of the most recent PHA or update and the technique used~~

~~(i) Expected date of completion of any changes resulting from the PHA~~

~~(ii) Major hazards identified~~

~~(iii) Process controls in use~~

~~(iv) Mitigation systems in use~~

~~(v) Monitoring and detection systems in use~~

~~(vi) Changes since the last PHA.~~

~~(e) Date of the most recent review or revision of the operating procedures~~

~~(f) Date of the most recent review or revision of the training procedures~~

~~(i) The type of training provided~~

~~(ii) The type of competency testing used~~

~~(g) Date of the most recent review or revision of maintenance procedures and the date of the most recent equipment inspection or test and the equipment inspected or tested~~

~~(h) Date of the most recent change that triggered management of change procedures and the date of the most recent review or revision of management of change procedures~~

~~(i) Date of the most recent pre-startup review~~ This safety criterion has been deleted.

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9.0 Documentation and Submittals

- ~~(j) Date of the most recent compliance audit and the expected date of completion of any changes resulting from the compliance audit~~
- ~~(k) Date of the most recent incident investigation and the expected date of completion of any changes resulting from the investigation~~
- ~~(l) Date of the most recent review or revision of employee participation plans~~
- ~~(m) Date of the most recent review or revision of subcontractor safety procedures~~
- ~~(n) Date of the most recent evaluation of subcontractor safety performance~~
- ~~(6) Information on the emergency response program:~~
 - ~~(a) Is there a written plan?~~
 - ~~(b) Does the plan include specific actions to be taken in response to an accidental releases of a regulated substance?~~
 - ~~(c) Does the plan include procedures for informing the public and local agencies responsible for responding to accidental releases?~~
 - ~~(d) Does the plan include information on emergency health care?~~
 - ~~(e) The date of the most recent review or update of the emergency response plan~~
 - ~~(f) The date of the most recent emergency response training for employees~~
 - ~~(g) The name and telephone number of the local agency with which the plan is coordinated~~
 - ~~(h) The other Federal or state emergency plan requirements to which the facility is subject~~
- ~~(7) Certification that, to the best of the signer's knowledge, information, and belief formed after reasonable inquiry, the information submitted is true, accurate, and complete~~

Implementing Codes and Standards

BNFL 5193-ISP-01 Integrated Safety Management Plan

Chapter: 5.0 Process Safety Management

Regulatory Basis

~~40 CFR 61 National Emission Standards for Hazardous Air Pollutants Location: 104~~
~~40 CFR 61 National Emission Standards for Hazardous Air Pollutants Location: 105~~
~~40 CFR 61 National Emission Standards for Hazardous Air Pollutants Location: 95~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 12~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 22~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 28~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 42~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 150~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 155~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 160~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 165~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 168~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 175~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 180~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 185~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 200~~
~~40 CFR 68 Chemical Accident Prevention Provisions Location: 220~~
~~WAC 173-480 Ambient Air Quality Standards and Emission Limits for Radionuclides Location: Part 070~~

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9.0 Documentation and Submittals

Safety Criterion: 9.3 - 2

~~The RMP shall be reviewed and updated as follows:~~

- ~~(1) Within five years of its initial submission or most recent update required by paragraphs (2) through (7) of this section, whichever is later~~
- ~~(2) No later than three years after a newly regulated substance is first listed by EPA~~
- ~~(3) No later than the date on which a new regulated substance is first present in an already covered process above a threshold quantity~~
- ~~(4) No later than the date on which a regulated substance is first present above a threshold quantity in a new process~~
- ~~(5) Within six months of a change that requires a revised PHA or hazard review~~
- ~~(6) Within six months of a change that requires a revised offsite consequence analysis~~
- ~~(7) Within six months of a change that alters the Program level that applied to any covered process~~

~~If a stationary source is no longer subject to this part (40 CFR Part 68), a revised registration shall be submitted to EPA within six months indicating that the stationary source is no longer covered.~~

Implementing Codes and Standards

~~BNFL 5193-ISP-01 Integrated Safety Management Plan
Chapter: 5.0 Process Safety Management~~

Regulatory Basis

~~40 CFR 68 Chemical Accident Prevention Provisions — Location: 190~~ [This safety criterion has been deleted.](#)

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9.0 Documentation and Submittals

Safety Criterion: 9.3 - 3

~~The following scenarios shall be analyzed for offsite consequences and reported in the Risk Management Plan (RMP):~~

~~one worst case release scenario that is estimated to create the greatest distance in any direction to an endpoint resulting from an accidental release of regulated toxic substances from covered processes under worst case conditions~~

~~one worst case release scenario that is estimated to create the greatest distance in any direction to an endpoint resulting from an accidental release of regulated flammable substances from covered processes under worst case conditions~~

~~additional worst case release scenarios for a hazard class if a worst case release from another covered process at the stationary source potentially affects public receptors different from those potentially affected by the worst case release scenarios~~

~~at least one alternative release scenario for each regulated toxic substance held in a covered process(es) and at least one alternative release scenario to represent all flammable substances held in covered processes (scenarios selected shall be more likely to occur than the worst case release scenario(s) and shall reach an endpoint offsite, unless no such scenario exists)~~

~~The population within a circle with its center at the point of the release and a radius determined by the distance to the endpoint shall be estimated. Population shall include residential population. The presence of institutions (schools, hospitals, prisons), parks and recreational areas, and major commercial, office, and industrial buildings shall be noted in the RMP. The environmental receptors within a circle with its center at the point of the release and a radius determined by the distance to the endpoint shall be listed in the RMP.~~

~~Endpoints. For analyses of offsite consequences, the following endpoints shall be used:~~

~~(1)Toxics. The toxic endpoints provided in Appendix A of 40 CFR 68~~

~~(2)Flammables. The endpoints for flammables vary according to the scenarios studied:~~

~~(i)Explosion. An overpressure of 1 psi.~~

~~(ii)Radiant heat/exposure time. A radiant heat of 5 kW/m² for 40 seconds.~~

~~(iii)Lower flammability limit. A lower flammability limit as provided in NFPA documents or other generally recognized sources.~~

Implementing Codes and Standards

BNFL-5193-ISP-01 Integrated Safety Management Plan
Chapter: 5.0 Process Safety Management

Regulatory Basis

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 20~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 22~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 25~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 30~~

~~40 CFR 68 Chemical Accident Prevention Provisions Location: 33~~ [This safety criterion has been deleted.](#)

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9.0 Documentation and Submittals

Safety Criterion: 9.3 - 4

~~The following records on the offsite consequence analyses shall be maintained:~~

- ~~(1) For worst case scenarios, a description of the vessel or pipeline and substance selected as worst case, assumptions and parameters used, and the rationale for selection; assumptions shall include use of any administrative controls and any passive mitigation that were assumed to limit the quantity that could be released. Documentation shall include the anticipated effect of the controls and mitigation on the release quantity and rate.~~
- ~~(2) For alternative release scenarios, a description of the scenarios identified, assumptions and parameters used, and the rationale for the selection of specific scenarios; assumptions shall include use of any administrative controls and any mitigation that were assumed to limit the quantity that could be released. Documentation shall include the effect of the controls and mitigation on the release quantity and rate.~~
- ~~(3) Documentation of estimated quantity released, release rate, and duration of release.~~
- ~~(4) Methodology used to determine distance to endpoints.~~
- ~~(5) Data used to estimate population and environmental receptors potentially affected.~~

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan
Chapter: 5.0 Process Safety Management~~

Regulatory Basis

~~40 CFR 68 Chemical Accident Prevention Provisions~~ — Location: 39 [This safety criterion has been deleted.](#)

Safety Criterion: 9.3 - 5

~~The offsite consequence analyses shall be reviewed and updated at least once every five years. If changes in processes, quantities stored or handled, or any other aspect of the stationary source might reasonably be expected to increase or decrease the distance to the endpoint by a factor of two or more, a revised analysis shall be completed within six months of the change and a revised risk management plan submitted.~~

Implementing Codes and Standards

~~BNFL-5193-ISP-01 Integrated Safety Management Plan
Chapter: 5.0 Process Safety Management~~

Regulatory Basis

~~40 CFR 68 Chemical Accident Prevention Provisions~~ — Location: 36 [This safety criterion has been deleted.](#)

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Appendix A: Implementing Standard for Safety Standards and Requirements Identification

These severity levels are related to the radiological and process standards of SRD Chapter 2.0 as follows:

- The unmitigated consequences associated with SL-1 events exceed the radiological standards for extremely unlikely events (SRD Safety Criterion 2.0-1).
- The unmitigated consequences associated with SL-2 events are below the radiological standards for extremely unlikely events (SRD Safety Criterion 2.0-1).
- The unmitigated consequences associated with SL-3 events are below the radiological standards for unlikely events (SRD Safety Criterion 2.0-1).
- The unmitigated consequences associated with SL-4 events are below the radiological standards for anticipated events (SRD Safety Criterion 2.0-1).

Consequences to the facility worker shall be evaluated at the worst-case occupied location. Consequences to the collocated worker and the public shall be evaluated at the locations specified in Appendix D to the *Safety Requirements Document, Volume II*.

Early in the design, the severity level is estimated based on the experience of the Integrated Teams. As the design progresses, these estimates are confirmed through the formal accident analyses described in Section 4.3.2. These accident analyses do not address all of the potential accidents identified, but they do address bounding examples of each type of accident. The team should use the results of the accident analyses to validate the severity level estimates for potential accidents not addressed in the formal accident analyses.

The potential consequences of releases of hazardous chemicals shall also be assessed. ~~The se hazards shall be subject to the graded application of the Process Safety Management (PSM) rule. If the type and quantity of chemical involved could result in concentrations equivalent to ERPG-2, for example, the full extent of the PSM rule shall be applicable.~~ assessment shall consider both the inherent hazard of the chemical itself, and the potential for the chemical hazard to initiate or exacerbate a radiological hazard.

4.3.2 Accident Analysis

Accident analyses provide confirmation that the design satisfies the radiological and process standards in the SRD. Accident analyses also provide confirmation of the severity levels assigned to potential accidents.

The formal accident analyses shall address design basis external events and natural phenomena as well as postulated internal events.

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Appendix A: Implementing Standard for Safety Standards and Requirements Identification

Consistent with the defense in depth principle, the control strategy development should emphasize preventive measures. It should also emphasize passive SSCs over active SSCs and retention of released material over dispersion. Ideally, the preferred control strategy should incorporate SSCs that prevent releases and SSCs that mitigate the consequences of a release, should it occur.

Once the preferred control strategy is identified, it shall be evaluated using the techniques described in Section 4.3 through 4.5. In addition, the evaluation of the control strategy shall identify the measures necessary to assure that it performs its functions reliably. Such measures include maintenance requirements, testing intervals and calibration frequency. The results of this evaluation serve to confirm that the control strategy is capable of satisfying SRD Safety Criteria 2.0-1.

If credit is taken for operator action to satisfy the public radiological exposure standards of Safety Criterion 2.0-1, adequate radiation protection is provided to permit access and occupancy of the control room or other control locations under accident conditions without personnel receiving radiation doses in excess of 5 rem TEDE whole body gamma and 30 rem beta skin for the duration of the accident. If credit is taken for operator action to satisfy public chemical exposure to ~~ERPG-2 limits~~[the standards of Safety Criterion 2.0-2](#), provisions for operational access and control are made so that the operator exposure does not exceed the ~~ERPG-2 limits~~[specified in Safety Criterion 4.3-7](#).

Documentation of the hazard control strategy development process shall clearly indicate selection of the control strategies and show the linkage of the control strategies to the respective hazards. The control strategy should be described in terms of the safety functions required (e.g., limit release of radionuclides, etc.) and in terms of a set of engineered features, administrative controls (procedures and training), and management systems selected for implementing the strategy. When the nature of the hazard is such that the appropriate control strategy is self-evident, the documentation need only demonstrate that the control strategy meets most, if not all, of the selection criteria, and need not provide a discussion of other, nonapplicable control strategies. Similarly, where a proven control strategy that is appropriate to the hazard exists and it is obvious to the team that there are no other alternative control strategies that could be equally attractive, then the documentation need only demonstrate that the control strategy meets most, if not all, of the selection criteria. Otherwise, the documentation should identify all control strategies considered and provide a defensible rationale for selection of the preferred strategy.

The following information produced by the control strategy definition shall be recorded in the hazard database:

- Preferred control strategy
- Linkage of the control strategy to the respective hazards
- Rationale for preferred control strategy selection
- Defense in depth provided
- Control strategy functions and performance requirements
- Estimate of the unmitigated event frequency
- Estimate of the consequences from the mitigated event
- Estimate of the mitigated event frequency
- Applicable design basis events (e.g., design basis earthquake)

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1.0 Project Safety Approach

1.3.7 Acceptable Level of Public Safety

During the facility design evolution, a consequence analysis is performed for each accident involving a radionuclide or chemical release. For those accidents that involve a radionuclide release, the calculated exposures are compared to the radiological exposure standards of Table 1-2 to determine the need for accident prevention or mitigation features credited for public safety. For chemical release, the projected exposure is compared to the standards ~~in Emergency Response Planning Guide 2 (ERPG-2)~~ [of SRD Safety Criterion 2.0-2](#). If the radiological or chemical release standards are not satisfied, the need for engineered or administrative controls to prevent or limit the release is addressed. These features are designed and maintained to the highest applicable standards to ensure their functional performance in the prevention or mitigation of accidents. Features credited for satisfying the public radiological exposure standards of Table 1-2 and chemical release exposure standards of ~~ERPG-2 (AIHA-1988)~~ [SRD Safety Criterion 2.0-2](#) are classified as Safety Design Class (which is a subset of Important-to-Safety as discussed in Section 1.3.10, “Classification of Structures, Systems, and Components). The location of the public (i.e., offsite receptor) for the purpose of establishing compliance with Table 1-2 and the chemical release standard, is established at the most limiting exposure location along the near exposure bank of the Columbia River, Highway 240, and a southern boundary as shown in Figure 1-2. If credit is taken for operator action to satisfy the public radiological exposure standards of Table 1-2, adequate radiation protection is provided to permit access and occupancy of the control room or other control locations under accident conditions without personnel receiving radiation doses in excess of 5 rem TEDE whole body gamma and 30 rem beta skin for the duration of the accident. If credit is taken for operator action to satisfy public chemical exposure to ~~ERPG-2 limits (AIHA-1988)~~ [the standards specified in SRD Safety Criterion 2.0-2](#), provisions are made so that the operator exposure does not exceed the ~~ERPG-2 limits~~ [standard specified in SRD Safety Criterion 4.3-7](#).

Table 1-2 Radiological Exposure Standards Above Normal Background (Sheet 1)

Description	Estimated Frequency of Occurrence f (yr ⁻¹)	General Guidelines	Worker	Collocated Worker	Public
<u>Normal Events:</u> Events that occur regularly in the course of facility operation (e.g., normal facility operations); including routine and preventative maintenance activities.	>0.1	Normal modes of operating facility systems should provide adequate protection of health and safety.	5 rem/yr 50 rem/yr any organ, skin, or extremity 15 rem/yr lens of eye 1.0 rem/yr ALARA design objective per 10 CFR 835.1002(b) (1)	5 rem/yr 1.0 rem/yr ALARA design objective per 10 CFR 835.1002(b) (1)	10 mrem/yr (airborne pathway) 100 mrem/yr (all sources) 100 mrem/yr (public in the controlled area) 25 mrem/yr (radioactive waste)
<u>Anticipated Events:</u> Events of moderate frequency that may occur once or more during the life of a facility (e.g., minor incidents and upsets).	10 ⁻² <f10 ⁻¹	The facility should be capable of returning to operation without extensive corrective action or repair.	5 rem/event (2, 3) 1.0 rem/event design action threshold (4)	5 rem/event (2, 3) 1.0 rem/event design action threshold (4)	100 mrem/event (3)

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The worker accident risk goal is stated in DOE/RL-96-0006 as, “The risk, to workers in the vicinity of the Contractor’s facility, of fatality from radiological exposure that might result from an accident should not be a significant contribution to the overall occupation risk of fatality to workers” (DOE-RL 1996b, Section 3.1.3). This goal is satisfied by calculating the risk of facility operation to the workers at the RPP-WTP. This is a best-estimate analysis based on realistic input and modeling assumptions. In performing this analysis, all SSCs capable of preventing or mitigating the event are considered. The evaluation of the availability and reliability of the SSCs include factors such as failures to start and failures to operate, as well as unavailability resulting from maintenance activities. Accident prevention and mitigation controls are added to the design as necessary to satisfy the worker accident risk goal.

If credit is taken for operator action to satisfy the worker radiological exposure standards of Table 1-2, adequate radiation protection is provided to permit access and occupancy of the control room or other control locations under accident conditions without personnel receiving radiation exposures in excess of 5 rem whole body gamma and 30 rem beta skin for the duration of the accident. If credit is taken for operator action to satisfy worker chemical exposure to ~~EPRG-2 limits (AIHA 1988)~~[the standard specified in SRD Safety Criterion 2.0-2](#), provisions are made so that the operator exposure does not exceed the ~~EPRG-2 limits~~[standard specified in SRD Safety Criterion 4.3-7](#).

Additional details on the radiological exposure standards applied to the public and workers are provided in *TWRS-P Privatization Project: Radiological and Nuclear Dose Standards for Facility and Co-Located Workers* (BNFL 1997e). This reference also provides information on the basis for the assumed location of the receptors.

1.3.9 Quality Assurance Program

The quality assurance program (QAP) is an important tool in achieving the goal of the safe operation of the RPP-WTP. The QAP defines the organizational structure, functional responsibilities, levels of authority, and interfaces for those managing, performing, and assessing the work to be performed. The Project developed its quality assurance program (QAP) in compliance with the requirements of 10 CFR 830.120, “Quality Assurance Requirements”, so the integration of the QAP for the TWRS-P Project began during the initial phases of the project. The QAP for Part A has been submitted to and approved by the U.S. Department of Energy (DOE) (Sheridan 1997). The QAP for Part B activities has been submitted to DOE; this version (BNFL 1998c) has been approved by the DOE Regulatory Unit (Gibbs 2000). As a result of early development of the QAP, the PHA, SRD, and HAR were developed in accordance with the requirements in the QAP. The application of the requirements of the QAP continues during design, procurement, construction, commissioning, inspections, operations, maintenance, modifications, and deactivation of the facility. Administrative processes such as training, procedure development, and configuration management are subject to the requirements of the QAP. The QAP is used by the Project team to ensure that all aspects of the integrated safety approach have been implemented for the Project.

The QAP requires periodic assessments of activities, both by management and by knowledgeable, independent personnel, as described in QAP sections 9 and 10. The conduct of audits to objectively evaluate the effectiveness and proper implementation of the QAP for activities affecting quality of SSCs and surveillances of specific project activities (e.g., process controls, preparation of safety documentation, configuration and document control, and records management) to supplement the compliance audit program are also described in the QAP. The QAP also describes the process of qualifying personnel who perform assessments, audits, and surveillances, as well as documentation of results and review by management.

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- 3) The SSC is designed to withstand the effects of natural phenomena such that it can perform any safety functions required as a result of a natural phenomena event. For example, if an earthquake can produce exposures to the public or workers in excess of standards, the Safety Design Class SSC that prevents or mitigates the exposures would be designed to be DBE-resistant and designated as Seismic Category I [for radiological hazards \(or Seismic Category III for chemical hazards\)](#). However, DBE-resistance is not applied automatically to Safety Design Class SSCs. It is applied only when the earthquake is the initiating event, or when the earthquake could cause the initiating event. A Safety Design Class SSC that does not have a DBE mitigating function is designated as Seismic Category III.

This natural phenomenon hazard (NPH) design philosophy is used for all severe natural phenomena events (i.e., earthquake, flood, high wind). Therefore, if a Safety Design Class SSC is needed for meeting public or worker exposure standards for a given NPH event, the NPH loads associated with that event are taken from SRD Volume II, Table 4-1, “Natural Phenomena Design Loads for Important-to-Safety SSCs with NPH Safety Functions”. All other NPH loads for the Safety Design Class SSC may be taken from SRD Volume II, Table 4-2, “Natural Phenomena Design Loads for SSCs without NPH Safety Functions” in lieu of SRD Table 4-1.

- 4) General design requirements are applied as identified in Section 4.0 of the SRD for Safety Design Class SSCs. See SRD Safety Criterion 4.1-5 as an example.
- 5) Specific design requirements based on the type of component are applied as invoked in SRD Chapter 4.0. For example, SRD Safety Criterion 4.4-5 provides requirements associated with Safety Design Class air treatment systems.
- 6) Other design requirements may be applied based on the specific safety function to be performed by the Safety Design Class SSC. This specific safety function is determined from the accident analysis that identified the need for prevention or mitigation by Safety Design Class SSCs.
- 7) Operational requirements (e.g., periodic testing and preventative maintenance) are applied to Safety Design Class SSCs through the application of Technical Safety Requirements (discussed in ISMP Section 4.2.3.4 “Technical Safety Requirements”).

When a SSC is classified as Safety Design Significant it has the following attributes.

- 1) Quality Level 2 (QL-2) is applied to the SSC. The QAP describes the requirements associated with QL-2.
- 2) The SSC is designed to withstand the effects of natural phenomena such that it can perform its safety functions required as a result of a natural phenomena event. If an earthquake can produce exposures to the public or workers in excess of standards, the Safety Design Class SSC that prevents or mitigates the exposures would be designed DBE-resistant as discussed above. The same NPH loads also are applied to a Safety Design Significant SSC if failure of the item could prevent the Safety Design Class SSC from performing its safety function required as a result of the DBE. Such an SSC is designated Seismic Category II. It should be noted, however, that DBE resistance is not automatically applied to Safety Design Significant SSCs. It is applied only when the earthquake is the initiating event, or when the earthquake could cause the initiating event. A Safety Design Significant SSC that does not have a DBE mitigating function is designated Seismic Category III.

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Table 1-3 Responsibilities for Changes to the RPP-WTP

Change	During Design and Construction	During Operation
Civil/structural design or a support system (e.g., mechanical and electrical systems)	Engineering	Engineering
Waste processing	Engineering	Operations
Facility operation, not related to startup testing	Operations	Operations
Commissioning program	Commissioning	Commissioning
Nuclear, radiological, and process safety	Radiological, Nuclear, and Process Safety	Radiological, Nuclear, and Process Safety
Environmental	Environmental	Environmental

The types of changes will differ during the phases of the Project. Initially, the majority of the changes will involve design changes to the facility. During operations, it is expected that the majority of the changes will involve facility operation or modifications rather than design. The CM program ensures that the Project establishes and maintains consistency between the requirements, the physical configuration, documentation, and facility operation throughout the design, construction, operation, and deactivation of the project. The scope and the controls of the CM program are discussed in further detail in ISAR Chapter 3.1, “Configuration Management”. The CM ~~and Management of Change~~ program ~~is required by 29 CFR 1910.119 “Process Safety Management of Highly Hazardous Chemicals”~~ is addressed in this ISMP section and in ISMP Section 5.3, “Configuration Management”.

1.3.17 Incident Investigations

The importance of the identification and correction of nonconforming conditions as part of a safety approach for the Project is recognized. To ensure that significant incidents that could adversely affect the quality, security, environment, operations, or health and safety of public and workers are brought to the attention of management, the project regulator, and the DOE Occurrence Reporting and Processing System, the ISMP requires incident investigation and reporting. ~~The process safety management regulations found in 29 CFR 1910.119(m)(1) require that employers investigate and report incidents that result in, or could have resulted in, a catastrophic release of a hazardous chemical in the workplace.~~ The incident investigations for the Project are expanded in scope to include accidental radionuclide releases and the construction and startup testing phases of the project. Also, reporting of events of less severity than those required of process safety management are included in the program. Incidents to be reported to the regulator include, for example, events or conditions at the facility that resulted in degradation of the principal safety barriers or in a condition beyond the design basis or emergency procedures. The incident investigation process requires that serious events or conditions are addressed and resolved and that the findings of the investigation are resolved.

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3.0 Conformance to Top-Level Safety Standards and Principles

The Project emergency management program is being developed for compliance with the requirements of ~~40 CFR 68, “Chemical Accident Prevention Provisions”~~, 40 CFR 355, “Emergency Planning and Notification”, 29 CFR 1910.38, “Employee Emergency Plans and Fire Prevention Plans”, ~~29 CFR 1910.119, “Process Safety Management of Highly Hazardous Chemicals”~~, and WAC 173-303-350, “Contingency plan and emergency procedures”.

The Emergency Response Plan incorporates into one document an overview of the emergency management program for the Project. The plan provides a description of how the Project implements the provisions of all applicable requirements. RPP-WTP specific emergency implementing procedures are developed to implement the requirements of the plan.

Table 3-1 lists the information to be included in each section of the Emergency Response Plan. Additional information on the Project Emergency Management Plan is presented in ISAR Chapter 9.0, “Emergency Management”.

3.11 Safety Systems Design

For facilities designed and built by the RPP-WTP contractor, a proven method for identifying the requirements of operational and engineered protective measures is undertaken, the results of which are applied during the entire project design phase. The RPP-WTP contractor approach to facility design applies a suite of company targets to facilitate compliance with RPP-WTP contractor standards and compliance with applicable radiological exposure standards. Where practical, passive features are used rather than active features. Potential faults are minimized by a design that moves the facility towards a safe state in response to failures, or by incorporating permanently available, passive features that render the facility safe following a failure. In some cases, however, it may be necessary to incorporate active engineered features into the design of a facility that act in response to the fault to render the facility safe.

The following hierarchy of safety measures is incorporated into the RPP-WTP design.

- 1) Operational Preventive Measure (OPM) is a corrective action taken by an operator to terminate the development of a fault sequence. Examples include operator responses to system parameters, sampling and chemical analyses, control system indications or alarms, and procedural instructions. An OPM is considered the first line of protection against a hazard under normal facility operating conditions. Should the OPMs fail, protective systems and devices are designed to automatically operate.
- 2) Engineered Protection Systems operate automatically to prevent a hazard from occurring, and generally use hardwired trips, mechanical devices, or programmable electronic systems (such as programmable logic controllers) commensurate with the potential risk of the hazardous situation. If protective measures fail, a hazardous situation may occur, the consequences of which can be reduced by the action of mitigating systems.
- 3) Mitigating Systems attenuate the consequence of a hazardous situation once it has occurred. They include ventilation systems, radiological alarm systems, and evacuation systems.

3.16.3 Incident Investigations

Incident investigations involve the identification, categorization, notification, reporting, and processing of information related to incidents, emergency events, and accidents associated with the RPP-WTP. Incident reports are sent to the DOE Occurrence Reporting and Processing System. Although the incident reporting process is usually initiated with operation of a nuclear facility, the process is developed and implemented for the RPP-WTP construction and testing activities in preparation for operation.

The incident investigation and reporting procedures, and the training to these procedures, ensure that the RPP-WTP regulator, the DOE Program Office, and RPP-WTP management are kept informed on a timely basis, of events and conditions during construction, testing, and operational activities that could adversely affect quality assurance, security, environment, operations, or the health and safety of the public and workers. Incident reports are evaluated for a potential noncompliance to a nuclear safety requirement reportable by the requirements of 10 CFR 820 “Procedural Rules for DOE Nuclear Activities”.

For an incident that indicates a potential inadequacy of previous safety analyses as defined in an approved safety analysis report or that indicates a possible reduction in safety margins as defined in the TSRs, actions are taken to place or maintain the facility in a safe state and a safety evaluation is performed. The completed safety evaluation is submitted to the regulator before removing any operational restrictions initiated in response to the incident.

Additional detail on incident investigations is included in ISMP Section 5.6.7, “Investigation of Incidents” and ISAR Section 3.7, “Incident Investigations”.

3.16.4 Unreviewed Safety Questions

- 1) The probability of occurrence or the radiological [or chemical](#) consequences of an accident or malfunction of equipment important to safety, previously evaluated in the facility safety analyses or other related safety analysis and evaluations not yet included in the updated facility safety analysis, may be increased
- 2) A possibility for an accident or equipment malfunction of a different type than any evaluated previously in the facility safety analyses or other related safety analysis and evaluations not yet included in the updated facility safety analysis, may be created
- 3) Any margin of safety is reduced.

Proposed temporary or permanent changes to administrative and engineered controls are reviewed by qualified USQ evaluators to determine if they would involve a USQ. An activity will not be undertaken without DOE review and approval if the initiation of the activity would itself involve an unreviewed safety question. If the proposed change does involve a USQ, one of the following three options are pursued.

- 1) The proposed activity is abandoned.
- 2) The proposed activity is modified to remove the USQ.
- 3) The proposed activity is submitted to the regulator for review and approval prior to completion of the activity.

5.0 Process Safety Management

The Facility may contain highly hazardous chemicals in amounts that exceed the thresholds listed by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.119, “Process Safety Management of Highly Hazardous Chemicals” (the Process Safety Management [PSM] Standard). Among these chemicals are, for example, anhydrous ammonia and nitric acid. If ~~threshold quantities of hazardous chemicals were exceeded~~, it ~~is~~ would be necessary to develop a PSM program that complies with OSHA requirements and with similar requirements of the prevention program in the U.S. Environmental Protection Agency (EPA) Risk Management Program, 40 CFR 68, “Chemical Accident Prevention Provisions”.

~~In accordance with 40 CFR 68, a single Risk Management Plan (RMP) is written to the format and content requirements of 40 CFR 68, Subpart G, “Risk Management Plan”. The RMP is reviewed and updated in accordance with 40 CFR 68.190, “Updates”. A qualified individual is assigned the overall responsibility for the development, implementation, and integration of the elements of the RMP. When the responsibility for implementing individual requirements of the program is assigned to other persons, the names or positions are documented and the lines of authority defined through an organization chart or similar document.~~

~~In addition~~ Even though compliance with 29 CFR 1910.119 and 40 CFR 68 does not apply to the RPP-WTP, the Project must comply with the top-level process safety management principles in Section 5.0 of DOE/RL-96-0006, *Top Level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors* (DOE-RL 1996b). ~~However, b~~ Because the top-level principles mirror most of the elements of the PSM standard (with the exception of employee involvement and trade secrets), a program that satisfies the OSHA PSM standard also satisfies the top-level principles.

This chapter focuses on the management systems that ensure the RPP-WTP operates safely, from the perspective of applying commercial industry practices ~~as exemplified by~~ and approaches that are compliant with PSM. ~~The PSM is integrated with similar management systems for radiological and nuclear safety.~~

5.1 Process Safety Information

A compilation of written process safety information is maintained to enable the RPP-WTP employees involved in operating processes to identify and understand the hazards posed by those processes involving hazardous chemicals. The following information is retained:

- 1) Toxicity information
- 2) Permissible exposure standards
- 3) Physical data
- 4) Reactivity data
- 5) Corrosivity data
- 6) Thermal and chemical stability data
- 7) An assessment of the effects of inadvertently mixing different materials

5.6.1 Procedure Development

Operating procedures provide clear instructions for safely operating the RPP-WTP during commissioning, normal operations, temporary operations, emergency shutdown, emergency operations, normal shutdown, and process startup following a turnaround or emergency shutdown. The procedures cover conditions under which emergency shutdown is required and assignment of shutdown responsibility to qualified operators, thus ensuring that emergency shutdown is executed in a safe and timely manner.

The procedures consider the consequences of deviations from outside normal operating limits and the steps required to correct those deviations. They contain safety and health considerations, such as the properties of, and hazards presented by, the chemicals used in the process. The procedures also contain the precautions necessary to prevent exposure, including engineered features, administrative controls and personal protective equipment, and control measures to be taken if physical contact or airborne exposure occurs. The procedures also address safety systems and their operation, and control of hazardous chemical inventory levels.

The operating procedures are periodically reviewed for human factors considerations and to ensure that they reflect current operating practice. The operating procedures are readily accessible to employees who work in or maintain a process. Safety Criteria 7.2-6, 7.2-7, and 7.2-8 of Volume II of the Safety Requirements Document (SRD) provide criteria for procedures required to implement PSM.

All operations that may affect safety are carried out in accordance with approved procedures that clearly delineate responsibility. Procedures provide step-by-step instructions on how to operate the facility or equipment routinely and safely. Some procedures are developed prior to the commissioning phase and serve to discipline the testing design intent to confirm facility operation to the design. During this phase, procedures are tested to demonstrate that they provide adequate direction for safe performance of facility operations.

There is a defined hierarchy of operating procedures, the position within which depends the safety significance of the operation to which the procedure refers. For example, procedures supporting the implementation of Technical Safety Requirements (TSR) or credited as defense-in-depth features for accident prevention and mitigation have a greater safety significance than those supporting operations with a lower impact on safety. Operator training emphasizes the importance of this hierarchy as well as the need to follow all procedures to carry out facility operations safely and efficiently.

The term “operating procedures” covers the entire range of procedures important for safe and efficient facility operations, in addition to those that detail routine facility operations. Procedures are provided for maintenance and emergency situations as well as day-to-day operations.

5.6.2 Updating of the Hazard Analysis Report

At least ~~every five years~~annually after the receipt of hazardous material at the RPP-WTP, the PHA and HAR are updated ~~and revalidated~~ by a qualified team. This is to assure that the process hazard analysis is consistent with the current process. The PHA and HAR are also updated as required by the ~~Management of Change procedures and change~~configuration management program.

5.6.8 Emergency Action Plan

For accidents that result in the need to take additional actions to protect the public and workers, and the environment from accidental releases of hazardous or radiological material, an emergency response program is provided in accordance with the Safety Criteria of SRD Volume II, Section 7.8, “Emergency Preparedness”. Emergency preparedness is addressed in ISMP Section 3.10, “Emergency Preparedness”. The Emergency Response Plan is outlined in ISAR Section 9.0, “Emergency Management”. This ISAR section describes how the plan complies with the requirements of 29 CFR 1910.38, “Employee Emergency Plans and Fire Protection”, ~~40 CFR 68, “Chemical Accident Prevention Provisions”~~, 40 CFR 355, “Emergency Planning and Notification”, DOE/RL-94-02, *Hanford Emergency Response Plan*, (DOE-RL 1994) and DOE/RL-96-0006, *Top-Level Radiological, Nuclear, and Process Safety Standards and Principles for TWRS Privatization Contractors* (DOE-RL 1996b).

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9.0 Scheduling of Safety-Related Activities

During operation of the RPP-WTP, reports will be submitted to DOE that report the following:

- 1) The quantity of each principal radionuclide in excess of background released to the unrestricted area in liquid and gaseous effluents
- 2) The calculated annual dose to the maximally exposed members of the public
- 3) The calculated collective dose to members of the public.

In addition, the [PHA and](#) HAR ~~is~~are reevaluated and updated ~~every 5 years as required by 40 CFR 68.50; “Hazard review” and 29 CFR 1910.119(e); “Process hazard analysis”~~annually.

Figure 9-1 does not provide a schedule for the initial safety assessment as the figure addresses only Part B activities. The initial safety assessment package was delivered to the Regulatory Unit in December 1997 as part of the Part A activities (BNFL 1997c).

9.3 Flow of Safety-Related Work and Deliverables

Figure 9-1 shows the interdependencies between the deliverables.

The scope of the proposed Limited Work Authorization (LWA) included in Figure 9-1 provides for early initiation of construction activities. The LWA allows for excavation, backfill, recompaction, and installation of the mud mat and ground grid. The LWA request would include information on site suitability (addressing hazards from natural phenomena and nearby facilities as they would impact the requested construction activity); excavation, backfill, and recompaction criteria; stability of surface soils; design requirements and Quality Assurance Program to be applied to the requested LWA activities; current SRD standards and ISMP program applicable to LWA activities; description of planned safety-related testing to be performed during LWA activities; references to the procedures to be employed for the requested work; and the environmental impacts of implementing the requested work activity.

<p style="text-align: center;">River Protection Project – Waste Treatment Plant Integrated Safety Management Plan ABCN-24590-01-00006, Rev 0, Attachment 2, Page 11 of 11</p>
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12.0 Definitions

Safety Analysis Report (DOE/RL-96-0006 [DOE-RL 1996b]). A document that fully describes the analyzed safety basis for the facility (safety envelope), fully demonstrates that the facility will perform and will be operated such that radiological, nuclear, and process safety requirements are met, and fully demonstrates adequate protection of the public, the workers, and the environment.

Safety Criterion. A measurable and/or demonstrable statement of an expected condition that ensures adequate protection of the public and workers. In satisfying the full set of Safety Criteria, the Project ensures that an acceptable status or condition protecting the public and/or workers has been achieved and/or maintained.

Safety Design Class. Structures, systems, or components that, by performing their specified safety function, prevent workers or the maximally exposed member of the public from receiving a radiological or chemical exposure that exceeds the accident exposure standards defined in the SRD. ~~Safety Design Class also applies to those features that by functioning, prevent the worker or maximally exposed member of the public from receiving a chemical exposure that exceeds the ERPG-2 (AIHA 1988) chemical release standard.~~ Those features credited for the prevention of a criticality event are also designated as Safety Design Class.

Safety Design Significant. Structures, systems, and components needed to achieve compliance with the radiological or chemical exposure standards for the public and workers during normal operation; and SSCs that can, if they fail or malfunction, place frequent demands on, or adversely affect the function of, Safety Design Class SSCs.

Safety Limits (DOE/RL-96-0006 [DOE-RL 1996b]). Limits on process variables associated with those physical barriers, generally passive, that are necessary for the intended facility safety functions and that are found to be required to prevent release of unacceptable levels of radioactive material to workers or the general public.

Specified Safety Function. That attribute of a Safety Design Class or Safety Design Significant engineered control credited for maintaining public or worker safety within exposure standards.

Safety Requirements Document (SRD)(DOE/RL-96-0006 [DOE-RL 1996b]). A document that contains the approved and mandated set of radiological, nuclear, and process safety standards and requirements which, if implemented, provides adequate protection of workers, the public, and the environment against the hazards associated with the operation of the Contractor's facilities.

Start of Cold-Testing. That point in the construction phase of each facility of the RPP-WTP during start-up testing but prior to admitting any significant quantities of radioactive waste or process chemicals into the facility. This milestone will be established in the Construction Agreement.

Tailoring (DOE G 450.4-1). Adapting something, such as a safety program, practice, or requirement to suit the need or purposes of a particular operation or activity, taking into account the type of work and associated hazards and hazardous situations.

Technical Safety Requirements (DOE/RL-96-0006 [DOE-RL 1996b]). Those requirements that define the conditions, the safe boundaries, and the management or administrative controls necessary to ensure the safe operation of the facility, reduce the potential risk to the public and facility workers from uncontrolled releases of radioactive materials, and from radiation exposures due to inadvertent criticality.

Evaluation of SRD & ISMP Proposed Change Summary **ABCN-24590-01-00006~~W375-00-00025~~ Revision 0**

This ABCN proposes the modifications of standards for Process Safety Management currently contained in the SRD, ~~QAPIP~~, and ISMP. Specifically, the changes include the following:

Revise the definition of Safety Design Class in SRD SC 1.0-8 and 2.0-2, ~~QAPIP Section 1.2.1~~, and ISMP Section 12 from ERPG-2 to workers or the public to ERPG-2 to the public, ERPG-3 to the co-located worker, or a single worker fatality or hospitalization of 3 or more workers.

Provide for use of TEEL values as substitute criteria in cases where no ERPG value has been published.

Replace ISMP with SRD Appendix A as an implementing standard for SRD SC ~~1.0-1~~, 3.1-1, ~~-2~~, -3, -4, -5, ~~-8~~.

Delete ISMP as implementing standard for SRD SC 1.0-1, 3.1-2 and 3.1-8.

Remove references to 29 CFR 1910.119 and/or 40 CFR 68 as regulatory bases in SRD SC 1.0-1, 3.1-1, -2, -3, -5, -6, -7, -8, 4.0-2, 4.5-23, 6.0-1, -5, 7.1-1, -2, 7.2-3, -3, -5, -6, -7, -8, 7.3-7, -10, -11, 7.6-2, -4, 7.7-1, -2, -3, 7.8-1, -2, -5, 9.1-7, and ISMP Sections 1.3.16, 1.3.17, 3.10, 5.0, 5.6.8, ~~7.2~~, and 9.2.

Delete SRD Section 9.3. Delete reference to SRD Section 9.3-1 in safety criterion 9.1-7.

Revise SRD SC 3.1-1 to specify chemical hazards must be included in the PHA.

Revise SRD SC 3.1-2 to allow compilation of process safety information appropriate to the level of design, to support the PHA.

Revise the update frequency for PHA and HAR specified in SRD SC 3.1-7, and ISMP Sections 5.6.2 and 9.2 from once every 5 years to annual.

Revise the seismic design criteria in SRD SC 4.1-3 and 4.1-4, and ISMP Section 1.3.10 for SSC's designated SDC on the basis of chemical consequences from SC-I/II to SC-III.

Revise the chemical concentration limits specified in SRD SC 4.3-7 for control room habitability from ERPG-2 to the values specified in 29 CFR 1910.120, and add 29 CFR 1910.120 to the list of regulatory bases.

Include chemical hazards in the definition of USQ specified in SRD SC 7.4-1, and ISMP Section 3.16.4.

Revise the scope of the Hazards Identification specified in SRD Appendix A, Section 4.3.1 to include chemical hazards.

Revise the discussion of control room habitability in SRD Appendix A, Section 5, and ISMP Sections 1.3.7 and 1.3.8 to be consistent with changes made to SRD SC 4.3-7.

Tables 1 and 2, below, specify each proposed change and provide the reason for the change. The evaluation that concludes the proposed changes provide adequate safety, comply with all applicable laws and regulations, and conform to top-level safety standards is provided in the text following the tables. Although the text pertains specifically to the changes proposed for the SRD, the rationale applies equally to the ~~other two documents, the ISMP and the QAPIP~~. The ~~ise~~ documents will be revised at the same time the SRD is revised, via the same ABCN AR.

Table 1. Changes to the SRD Requirements for the PSM Program

Proposed Change	Reason for Change
SC 1.0-1 Delete <u>Replace</u> ISMP Chapter 5.0 and Section 4.1 with SRD Appendix A as an implementing standard. Delete 40 CFR 68 and 29 CFR 1910.119 as regulatory basis documents.	Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to process hazards analysis. Other SCs commit the contractor to a program of acceptable management practices, technologies, procedures, and operations. 29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rules.
SC 1.0-8 Revise the definition of Safety Design Class to show ERPG-3 concentrations for the co-located worker, and concentrations that could reasonably be expected to results in either a single worker fatality or require in-patient hospitalization of 3 workers or more. Definition of SDC for members of the public remains unchanged. Provide for use of TEEL concentrations where no ERPG has been published.	The threshold value for co-located workers should be increased to be consistent with recommended usage of the ERPG's for emergency planning. The threshold value for facility workers should be increased to be consistent with OSHA requirements regarding the immediate reporting of serious accidents. Several chemicals planned for use at WTP do not have ERPG data, therefore an equivalent value is needed and TEEL will be <u>u</u> tilized.
SC 2.0-2 See SC 1.0-8, above.	SC 2.0-2 See SC 1.0-8, above. <u>The criteria for facility worker exposure has been revised to: Accidents affecting the facility worker that could cause in-patient hospitalization of at least 3 facility workers, or at least a single fatality. This is consistent with 29 CFR 1904.8.</u>
SC 3.1-1 Revise the criterion to clarify that the process hazards analysis must consider both radiological and chemical hazards. Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	The text of the standard should be revised for clarification and consistency with the proposed implementing standard. This standard requires that both chemical and radiological hazards be evaluated in the standards identification process. Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to process hazards analysis. 29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the

	threshold quantities listed in the <u>PSM</u> rule s .
SC 3.1-2 Revise text to require compilation of process safety information appropriate to the stage of design, to support the PHA. Delete Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	Requiring acquisition of all process safety information prior to implementation of the Hazards Identification step of the ISM process often causes undue delays in standards identification. Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to process safety information. <u>Other SCs commit the contractor to a program of acceptable management practices, technologies, procedures, and operations.</u> 29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rule s .
SC 3.1-3 Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to process hazards analysis. 29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rule s .
SC 3.1-4 Replace the ISMP with Appendix A of the SRD as the implementing standard.	Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to process hazards analysis.
SC 3.1-5 Replace the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 as the regulatory basis.	Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to employee participation in the process hazards analysis. 29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rule.
SC 3.1-6 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rule s .

<p>3.1-7 Revise PHA update interval to once every year. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.</p>	<p>The interval for revision of the chemical portions of the PHA should be consistent with the interval for revision of the radiological portion, since the same PHA covers both hazard types. 29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rules.</p>
<p>3.1-8 Delete<u>Replace</u> the ISMP with Appendix A of the SRD as the implementing standard. Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.</p>	<p>Appendix A should replace the ISMP as the implementing standard because Appendix A provides more definitive requirements pertaining to the disposition of process hazards analysis results (ie., incorporate them into the SARs). <u>Other SCs commit the contractor to a program of acceptable management practices, technologies, procedures, and operations.</u> 29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rules.</p>
<p>4.0-2 Remove reference to 29 CFR 1910.119 as the regulatory basis.</p>	<p>29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the <u>PSM</u> rule.</p>
<p>4.1-3 Revise the seismic standard to specify SC-III for chemical systems.</p>	<p>The designation of SC-I and II is intended to address hazards that are significantly larger at WTP than they are in the non-nuclear industry (ie., the large radioactive material inventories). Therefore a seismic design standard needed to be developed specifically for the nuclear industry. This standard was not intended to be applied to the chemical hazards at WTP. The chemical hazards routinely encountered in the chemical industry are significantly larger both in toxicity and amounts than those present at WTP. These non-nuclear industries have developed seismic design requirements to deal with these chemical hazards. These requirements are embodied in the Uniform Building Code, which is implemented at WTP as Seismic Category III, as augmented.</p>

SC 4.1-4 Revise to include chemical hazards.	See reason for revisions to SC 4.1-3 above.
SC 4.3-7 Revise to require that worker exposure not exceed concentrations specified in 29 CFR 1910.120.	The ERPG-2 value is inappropriate for purposes of control room habitability. The correct standard should be the standards for emergency exposures specified in 29 CFR 1910.120.
SC 4.5-23 Remove reference to 29 CFR 1910.119 as the regulatory basis.	29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
SC 6.0-1 Remove reference to 29 CFR 1910.119 as the regulatory basis.	29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
SC 6.0-5 Remove reference to 29 CFR 1910.119 as the regulatory basis.	29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
SC 7.1-1 and -2 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule s .
SC 7.2-3 through 7.2-8 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule s .
SC 7.3-7 and -11 Remove reference to 29 CFR 1910.119 as the regulatory basis.	29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
SC 7.3-10 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule s .
SC 7.4-1 Revise text to include chemical hazards in the USQ process.	The WTP has elected to manage radiological, nuclear and process safety as a single integrated program. Therefore, the existing USQ program

	has been modified to implement the PSM aspect of Management of Change.
SC 7.6-2 Remove reference to 29 CFR 1910.119 as the regulatory basis.	29 CFR 1910.119 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
SC 7.6-4 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule s .
SC 7.7-1, -2, and -3 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule s .
SC 7.8-1, and -5 Remove reference to 40 CFR 68 as the regulatory basis.	40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
SC 7.8-2 Remove reference to 29 CFR 1910.119 and 40 CFR 68 as the regulatory basis.	29 CFR 1910.119 and 40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of either of these rules. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule s .
SC 9.1-7 Remove reference to 40 CFR 68 as the regulatory basis. Delete reference to safety criterion 9.3-1.	40 CFR 68 should be deleted because WTP is currently not required to implement the requirements of this rule. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
Section 9.3 Delete the entire chapter.	WTP is currently not required to implement the requirements of 40 CFR 68. None of the chemicals contained in the facility exceed the threshold quantities listed in the PSM rule.
Appendix A, Section 4.3.1 Revise to be more specific about the scope of the chemical hazards assessment.	The ISM process requires that chemical hazards be included as potential initiators of radiological events, as well as hazards in their own right.
Appendix A, Section 5.0 Revise discussion of ERPG concentrations.	Revision is needed to be consistent with revisions made to SC 1.0-8.

~~Table 2.~~ Changes to the ~~QAPIP and~~ ISMP

Proposed Change	Reason for Change
QAPIP Section 1.2.1 Revise definition of Safety Design Class.	Revision is needed to conform to SRD definition.
ISMP Section 1.3.7 Delete <u>Replace</u> references to ERPG-2 <u>with SRD SC 2.0-2</u> and revise specification for control room habitability.	Revision is needed to conform to corresponding changes to the SRD.
ISMP Section 1.3.8 Delete <u>Replace</u> references to ERPG-2 <u>with SRD SC 2.0-2</u> and revise specification for control room habitability	Revision is needed to conform to corresponding changes to the SRD.
ISMP Section 1.3.10 Exclude <u>Revise</u> chemical safety SSC's from SC-I/II criteria <u>to SC-III</u> .	Revision is needed to conform to SRD allocation of seismic design <u>category</u> requirements for chemical safety.
ISMP Section 1.3.16 Delete reference to 29 CFR 1910.119.	Requirements of 29 CFR 1910.119 do not apply to WTP, since there are no threshold -chemicals present <u>above threshold quantities</u> .
ISMP Section 1.3.17 Delete reference to 29 CFR 1910.119.	Requirements of 29 CFR 1910.119 do not apply to WTP, since there are no threshold -chemicals present <u>above threshold quantities</u> .
ISMP Section 3.10 Delete reference to 29 CFR 1910.119 and 40 CFR 68.	Requirements of 29 CFR 1910.119 and 40 CFR 68 do not apply to WTP, since there are no threshold -chemicals present <u>above threshold quantities</u> .
ISMP Section 3.16.4 Include chemical hazards in definition of USQ.	Revision is needed to conform to SRD definition.
<u>ISMP Sections 5.0 and 5.6.8 Delete reference to 40 CFR 68. Update Chapter 5 introduction to reflect that 29 CFR 1910.119 and 40 CFR 68 do not apply.</u>	<u>Requirements of 29 CFR 1910.119 and 40 CFR 68 do not apply to WTP, since there are no chemicals present above threshold quantities.</u>
ISMP Section 5.6.2 Revise update requirements for <u>PHA & HAR</u> to annually.	Revision is needed to conform to SRD requirement to update PHA <u>and HAR</u> .
ISMP Section 9.2 Revise update requirements for the <u>PHA and HAR</u> and delete reference to 29 CFR 1910.119 and 40 CFR 68.	Revision is needed to conform to SRD requirement to update PHA <u>and HAR</u> . Requirements of 29 CFR 1910.119 and 40 CFR 68 do not apply to WTP, since there are no threshold -chemicals present <u>above threshold quantities</u> .
ISMP Section 12.0 Revise definition of Safety Design Class.	Revision is needed to conform to SRD definition.

A. Evaluation

Provision of Adequate Safety

Removal of the citations of 29 CFR 1910.119 and 40 CFR 68 as regulatory bases for the several safety criteria listed in the Tables above is being proposed because WTP does not contain ~~the threshold~~ quantities of chemicals above threshold, that would trigger application of the programs required by these rules. Therefore these rules do not form the regulatory basis for the WTP's PSM program, or for the Risk Management Plan. This same rationale explains the changes proposed to SRD Section 9.3. The basis for the PSM program continues to be the requirements for the PSM program specified in DOE/RL-96-0006, Chapter 5. The revisions to the standards in the SRD do not affect the SRD's application of the correct regulatory basis document, and it is concluded these revisions do not affect the PSM program.

Replacement of cited sections of the ISMP with the SRD Appendix A as the implementing standard for safety criterion ~~1.0-1~~, 3.1-1, ~~-2~~, -3, -4, and ~~-5, and 3.1-8~~ provides an implementing standard for these criterion that is more detailed. Additionally, the proposed new implementing standard more explicitly aligns the PSM program with the ISM process. Adoption of the new implementing standard does not affect the PSM program specified in the SRD other than to make the implementation details of certain elements of the program more clear. Deleting the citing sections of the ISMP for SRD safety criteria 1.0-1, 3.1-2 and 3.1-8 does not impact the PSM program, since the ISMP does not provide any additional detail for these criteria.

Revision of the definition of "Safety Design Class" in SC's 1.0-8 and 2.0-2 is being proposed to bring the WTP PSM program more into line with commercial practice. The chemical industry currently does not recognise the term "Safety Design Class" (SDC). However both the industry and it's regulators (OSHA and EPA) do recognise the existence of a level of potential harm to workers and the public that warrants special consideration. Hence, for example, the PSM rule. Despite the fact that the PSM rule (per se) does not require implementation of a PSM program, WTP has elected to impose special design and operations requirements to chemicals that could conceivably pose undue risk to workers or to the public. This is done by applying the concept of "Safety Design Class" to structures, systems, and components (SSCs) used to protect workers and the public from significant chemical hazards. Application of the SDC category to WTP SSC's should, however, be comparable to levels of chemical hazards that, in commercial industry, represent a high level of concern. These levels of concern are proposed to be the ERPG-3 concentration at locations nearby the WTP (ie., at the co-located worker), ERPG-2 concentrations at locations more distant from the facility (ie., at the location of the public), or worker injury grave enough to trigger the emergency notification requirements of 29 CFR 1904.8 *Reporting of fatality or multiple hospitalization incidents*. By revising the definitions of SDC, the WTP is more consistent with commercial chemical industry practice, and continues to provide adequate safety to workers and the public. Several of the chemicals planned for use at WTP do not have published ERPG values. The DOE Subcommittee on Consequence Assessment and Protective Action (SCAPA) has published Temporary Emergency Exposure Limits (TEELs) for chemicals that as yet do not have published ERPG values. The TEELs are equivalent to ERPG (eg., TEEL-3 = ERPG-3).

Revision of the requirement in SC 3.1-2 to collect all process safety information before conducting the PHA is proposed to enable better integration of the PSM program with the WTP overall ISM requirements. The purpose of ISM is to design in safety. Therefore, the Hazard

Identification (or PHA) portion of ISM is often started using incomplete, or draft information. Some of the information required by SC 3.1-2 (e.g., analysis of consequences of deviation) is not available until after conducting the PHA. However, before the ISM process is completed, all of the information required by the SC 3.1-2 will have been developed. Therefore, the proposed revision does not affect the standard's ability to provide adequate safety.

Revision of the update interval for the Process Hazards Analysis (PHA) in SC 3.1-7 from the current 5 years to 1 year is proposed to provide better integration between the WTP's Radiological/Nuclear Safety and its PSM programs. Since the PHA scope includes both nuclear and chemical hazards, it makes sense to update both aspects at the same time. This change does not affect the ability of the standards to provide adequate safety.

Revision of the seismic design requirements specified in SC's 4.1-3 and 4.1-4 is proposed to make the design of the WTP, with respect to chemical hazards, consistent with commercial industry practice. Seismic Category I and II were developed to provide design requirements for SSC's needed to protect workers and the public from hazards not normally encountered in the chemical industry. These are the radiological hazards unique to (in this case) a nuclear waste processing plant. The chemical industry has proven seismic design requirements for SSC's needed to protect workers and the public from chemical hazards, many of which far exceed the chemical hazards at the WTP. These design requirements are contained in the Uniform Building Code. The UBC forms the basis for Seismic Category III. Therefore it is proposed the WTP adopt Seismic Category III as the governing standard for seismic design of SSC's related to chemical hazards. By revising the seismic design criteria in the SDC, the WTP is more consistent with commercial chemical industry practice, and continues to provide adequate safety to workers and the public.

Safety Criterion 4.3-7 has been revised to be consistent with the requirements of 29 CFR 1910.120, Hazardous Waste Operations and Emergency Response (HAZWOPER). This rule establishes maximum allowable concentrations of hazardous chemicals in the workplace under emergency conditions. These concentrations are equal to or less than ERPG-2 levels. Concentrations above these limits require personal protective equipment even for short term exposures. Therefore SC 4.3-7 continues to provide adequate safety.

The proposed revisions to Appendix A provide added clarity to the integration of PSM with the Radiological/Nuclear safety programs (Section 4.3.1), and bring the discussion of ERPG concentrations in Section 5.0 into line with the revisions proposed for SC 1.0-8 and 2.0-1. These revisions do not affect the standard's provision for adequate safety.

Compliance with applicable laws and regulations.

Laws and regulations potentially affected by the proposed changes to the SRD include 29 CFR 1910.119 and .120, 40 CFR 68, and the Uniform Building Code. WTP remains fully compliant with these laws and regulations - as applicable.

Conformance to top-level safety standards.

The top-level safety standards applicable to the proposed changes to the SRD are those cited as regulatory bases in the various Safety Criteria proposed for revision in ~~Table 4~~. The following Table 3 provides the title or subject of each top-level safety standard so cited, and a brief discussion showing that conformance to the standard is maintained.

~~Table 3.~~ Conformance to Top-level Safety Standards DOE/RL-96-0006

Top-level standard	Safety Criterion	Statement of conformance
3.3.1 Public Protection	1.0 - 8	The SRD remains unchanged w/r to this top-level standard.
3.3.2 Worker Protection	1.0 – 8	The approach proposed to evaluate the design w/r to worker safety is consistent with acceptable industry practice, as evidenced in the discussion provided in the preceding sections of this evaluation.
3.3.3 Accident Vulnerability Mitigation	3.1 - 4	The SRD remains unchanged w/r to this top-level standard. A new, more comprehensive implementing standard is proposed.
4.1.2.3 Safety Responsibility – Site and Technical Support	7.8 - 2	The SRD remains unchanged w/r to this top-level standard.
4.2.2.2 Proven Engineering Practice -	4.1 –3, -4	Substitution of the UBC seismic requirements for SSCs designed against chemical hazards is consistent with proven engineering practice, as evidenced by the discussion in the preceding sections of this evaluation.
4.2.4.1 Emergency Preparedness – Support Facilities	4.3 - 7	The SRD remains unchanged w/r to this top-level standard, in that the maximum allowable concentrations of hazardous chemicals in the control room under accident conditions remain at safe levels.
4.2.6.2 Human Factors – Instrumentation Control and Design	4.3 - 7	The SRD remains unchanged w/r to this top-level standard, in that the maximum allowable concentrations of hazardous chemicals in the control room under accident conditions remain at safe levels.
4.2.8.1 Preoperational Testing – Testing Program	6.0 - 1	The SRD remains unchanged w/r to this top-level standard.
4.3.1.4 Conduct of Operations - Readiness	6.0 - 5	The SRD remains unchanged w/r to this top-level standard.
4.3.2.2 Radiation Protection – Procedures and Monitoring	7.2 - 5	The SRD remains unchanged w/r to this top-level standard.

4.3.3.1 Emergency Preparedness – Offsite Measures	7.8 - 5	The SRD remains unchanged w/r to this top-level standard.
4.3.4.1 Training and Qualification – Personnel Training	7.2 - 3	The SRD remains unchanged w/r to this top-level standard.
4.3.4.3 Training and Qualification – Conditions Beyond the Design Basis	7.2 - 3	The SRD remains unchanged w/r to this top-level standard.
4.3.5.1 Operational Testing, Inspection, and Maintenance	7.6 – 2, -4	The SRD remains unchanged w/r to this top-level standard.
4.4.4 Unresolved Safety Questions	7.4 - 1	The SRD remains unchanged w/r to the radiological/nuclear safety aspects of this top-level standard. The safety criterion (7.4 – 1) has been revised to clarify it's applicability to chemical hazards as well.
5.1.1 Process Safety Management	1.0 - 1	The SRD remains unchanged w/r to its implementation of this top-level standard. A new, more comprehensive implementing standard is proposed.
5.1.2 Process Safety Objective	1.0 - 1	The SRD remains unchanged w/r to its implementation of this top-level standard. A new, more comprehensive implementing standard is proposed.
5.2.1 Process Safety Information	3.1 - 2	The full suite of process safety information is still required, however the safety criterion has been modified to be more compatible with an emerging design and the cyclic nature of the ISM process. A new, more comprehensive implementing standard is proposed.
5.2.2 Process Hazard Analysis	3.1 – 1, -2, -3, -4, -6, -7	The SRD remains unchanged w/r to this top-level standard. A new, more comprehensive implementing standard is proposed <u>except for 3.1-2</u> .
5.2.3 Operating Procedures	7.2 - 5	The SRD remains unchanged w/r to this top-level standard.
5.2.4 Training	7.2 - 3	The SRD remains unchanged w/r to this top-level standard.
5.2.5 Subcontractors	7.1 - 2	The SRD remains unchanged w/r to this top-level standard.
5.2.6 Pre-startup Safety Review	6.0 - 5	The SRD remains unchanged w/r to this top-level standard.
5.2.7 Mechanical Integrity	7.6 - 4	The SRD remains unchanged w/r to this top-level standard.

5.2.8 Hot Work Control	4.5 - 23	The SRD remains unchanged w/r to this top-level standard.
5.2.9 Management of Change	4.0 – 2, 7.4 - 1	The SRD remains unchanged w/r to the radiological/nuclear safety aspects of this top-level standard. The safety criterion (7.4 – 1) has been revised to clarify it's applicability to chemical hazards as well.
5.2.10 Incident Investigation	7.7 – 1, -2, - 3	The SRD remains unchanged w/r to this top-level standard.
5.2.11 Emergency Planning and Response	7.8 - 2	The SRD remains unchanged w/r to this top-level standard.
5.2.12 Compliance Audits	7.3 - 10	The SRD remains unchanged w/r to this top-level standard.

~~B. Certification of SRD Changes~~

~~The SRD continues to identify a set of standards that, when implemented, will provide adequate safety, comply with all applicable laws and regulations, and conform to top-level safety standards.~~

~~Certification that the revised SRD identifies a set of standards that continues to provide adequate safety, comply with all applicable laws and regulations, and conform to top-level safety standards is based on adherence to the DOE/RL-96-0004 Standards Identification Process and successful completion of review and confirmation by the PSC.~~

~~_____~~
~~WTP General Manager/Designee Approval _____ Date~~